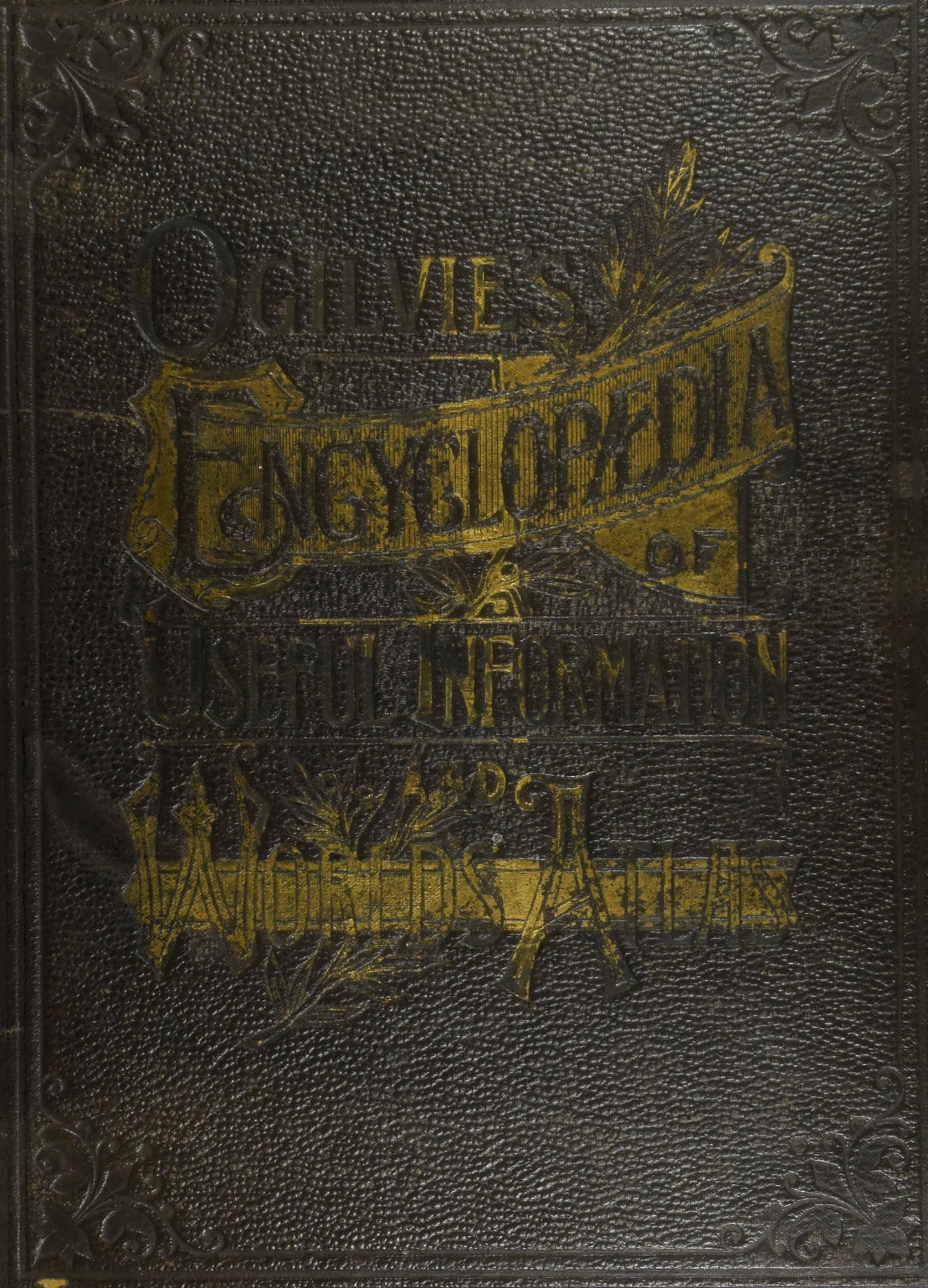

OGILVIE'S ENCYCLOPEDIA OF USEFUL INFORMATION AND WORLD'S ATLAS

Y285
1895

OGILVIE'S
ENCYCLOPÆDIA OF USEFUL INFORMATION

AND

Atlas of the World.

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BY

GEORGE W. OGILVIE.

Illustrated with many Engravings.

> *"Let us have facts—real, unmistakable facts. There can be no Science without them."*
>
> ROBERT DICK.

STANDARD EDITION.

ENTERED AT STATIONERS' HALL.

GEORGE W. OGILVIE, PUBLISHER, 16, OLD CHANGE, LONDON, E.C.

SEVENTY-FIVE TEST QUESTIONS.

ON LITERARY, HISTORICAL, AND MISCELLANEOUS SUBJECTS,

Designed to indicate in a slight degree the Varied, Interesting, and Valuable Nature of the Information contained in "Ogilvie's Encyclopædia of Useful Information and Atlas of the World." The answers to these questions are taken from but 35 pages in the book, and are only a slight portion of the information contained on each of those pages. As there are 650 pages in the Encyclopædia, each teeming with information, any one can readily calculate its great value.

If you can answer them all correctly you have no need for this Volume; if you cannot do so it is of value to you, and you ought to have it.

1. How many pounds can be supported by a silver wire one-twelfth of an inch in diameter? Page 251.

2. Snow never melts on the tops of the high mountains, and is constantly falling; how is it they do not increase in height? Page 251.

3. What animal, the species now extinct, had the head of a lizard, teeth of a crocodile, body of a serpent, ribs of a chameleon, and paddles of a whale? Page 251.

4. What great poem was sold to the publishers for £5? Page 251.

5. What root is so highly prized in the East that it often sells for its weight in gold? Page 251.

6. Which is the oldest known existing specimen of architecture in the world? Page 251.

7. What charm was worn in ancient times to cure fever and ague? Page 251.

8. How is gunpowder manufactured? Page 252.

9. What is the Legend of the Seven Sleepers? Page 252.

10. What is mineral wool? Page 252.

11. One of the world's great lakes is so deep, it reaches four hundred feet below the ocean level; which is it? Page 252.

12. What is meant by the "Golden Age" of a country? Page 252.

13. What is the value of the finest and largest diamond in the world? Page 252.

14. When tinned goods are poisonous, what minute organism is present? Page 253.

15. Where, when, and by whom was established the first academy of ancient times? Page 253.

16. Who invented geographical maps? Page 253.

17. Which is the largest and probably the most magnificent palace in the world? Page 253.

18. What lake in Italy, more than a thousand feet deep, is formed in the basin of an extinct volcano, and drained by a tunnel one and a half mile long, opened 390 years B.C. Page 253.

19. In what style of architecture was the Temple of Diana at Ephesus, and how large was it? Page 253.

20. What is the source of alcohol? Page 253.

21. What Greek boy exclaimed, "My father will leave nothing for me to do," and afterwards opened to Europeans the road to India, and gave them the first glimpses of the magnificence and splendour which have dazzled and captivated their imaginations for two thousand years? Page 254.

22. What beautiful white metal is present in common clay, and to what use did Napoleon I. put it? Page 73.

23. Who translated the Bible into Gothic, and where is, at the present time, the original translation? Page 254.

24. According to a very ancient tradition there existed a nation of strong-minded women who suffered no man to remain among them, but marched to battle under command of their queen; they killed or banished the boys, and brought up the girls for war. What were these women called? Page 255.

25. A celebrated philosopher and teacher, when asked by the town magistrates what funeral honours he desired at his death, replied, "Give the boys a holiday every anniversary." Who was he? Page 255.

26. By what means did Mark Antony and Cleopatra come to their deaths? What is the history of Cleopatra's Needles, and where is her mummy now to be seen? Page 256.

27. Name the Egyptian deity, in the form of a man and the head of a dog, whose office was to accompany the ghosts of the deceased into Hades? Page 256

28. Where was built the "Wall of Antoninus"? Page 256.

29. Why was the Great Wall in China built, and what was its length? Page 256.

30. What doctrine teaches that Christians are freed from obligation to keep the law of God? Page 256.

31. What is the largest of all known flowers? Page 256.

32. What liquid mixture will dissolve gold? Page 256.

33. Who was chosen apostle in the place of Judas Iscariot, and what is his badge in mediæval pictures? Page 256.

34. Which old, civilised, and enlightened country of Europe has but seven miles of railway? Page 257.

35. Who was the greatest of the kings of Babylon? Page 257.

36. What kind of fishes shoot insects with water-balls? Page 257.

37. What splendid ruin of Baalbek has six beautiful Corinthian columns yet standing, each eighty-nine feet high, and twenty-two feet in circumference? Page 257.

38. In several countries of the world it is customary for women to have several husbands; what is the custom called, and where practised? Page 257.

39. What was the origin of the British Museum? Page 257.

40. What is the variation of the size of an acre in twenty-five countries of the world? Page 1.

41. What is the distance around the world from principal port to port? Page 14.

42. Of what gases and in what proportion is air composed? Page 15.

43. How many editions of the Bible were published in the sixteenth century? Page 17.

44. What are the largest bells in the world, and where are they? Page 17.

45. Of what is human blood composed? Page 18.

46. How long can a man live without air, without sleep, without water, without food? Page 23.

47. There was an earthquake in 1703 that destroyed 190,000 people; where did it occur? Page 23.

48. There is a well-known waterfall, the power of which is worth £15,000,000 annualy, if utilised, but which is not used; where is it? Page 28.

49. How many kinds of plants and animals are there in the known world? Page 32.

50. What is a woman's chance of marriage at various ages? Page 32.

51. What are the dimensions of the world's great cathedrals? Page 217.

52. How can you detect contagious diseases in children? Page 218.

53. What are the component parts of cheese? Page 21.

54. What is the value of an elephant for its ivory? Page 29.

55. Which are the longest rivers in the world? Page 214.

56. Who have been Poets Laureate from 1591 to 1891? Page 297.

57. What nineteen metals are worth more than gold? Page 304.

58. One of the nations of the world uses an alphabet with thirty-five letters, and another uses one with but twenty letters; what nations are they? Page 304.

59. How many words, letters, chapters, verses, and books does the Bible contain? Page 306.

60. The ceiling of an ancient palace was decorated with silver to the value of £200,000; where was it? Page 315.

61. What is the proportion of land and water on the earth's surface? Page 545.

62. What is the length of English racecourses? Page 635.

63. How is gold leaf made, and how large a surface will an ounce cover when made into leaf? Page 338.

64. When was coffee discovered, and how? Page 326.

65. How could you make invisible ink? Page 324.

66. In cremation how long does it take to consume a body, and how many pounds of ashes will a 140-lb. body leave? Page 22.

67. What is the annual saving to commerce by the use of the Suez Canal? Page 21.

68. What nation will average in weight with the Scotch, and yet whose brain will average seven ounces less than that of the Scotch? Page 18.

69. What will be the comparative naval strength of European nations in 1894? Page 11.

70. What will cure diphtheria, and what are its symptoms? Page 367.

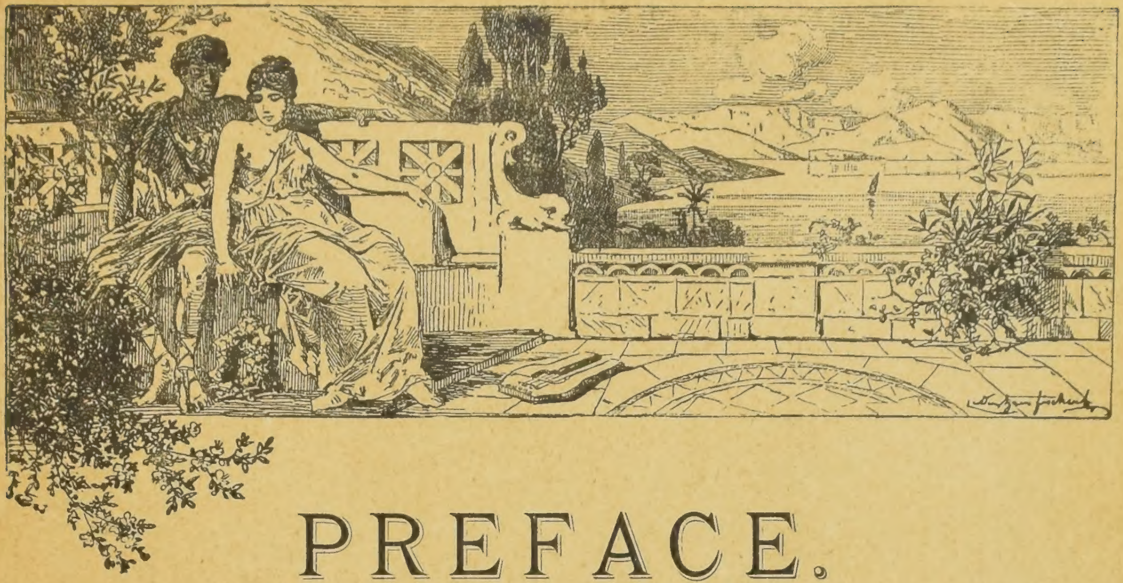
71. How long does it take to digest various kinds of food? Page 23.

72. What is the best known cure for influenza? Page 381.

73. Koumiss is a well-known drink for people with weak stomachs, and is sold at a high price. How can you make it, at a cost of 3*d*. per quart? Page 482.

74. It is customary to put shades on lamps and gas lights; what percentage of light is lost by the use of them? Page 31.

75. What is the value of money mentioned in the Bible? Page 317.



PREFACE.

THE increasing demand from all parts of the Empire for my Encyclopædia has encouraged me to prepare a large New Edition. While retaining all the popular and useful information of former editions, I have determined to give my readers a valuable series of new illustrations. These will add greatly to the popularity of the work, and my hope is that hundreds of thousands of readers will be induced to acquire it.

My grateful acknowledgements are due for the cordial support so long given to me. Stimulated by past experience, I have in the present work made special efforts to present a great array of rare and valuable information relating to commerce, the industrial arts, the vital concerns of health, home, and domestic felicity. The coloured atlas of more than thirty maps of every part of the world, and descriptive account of all countries, with many new illustrations, will be a special feature of the book.

To my distributors I desire to give my hearty acknowledgements ; their enterprise has made my coupon method of distribution a great success, and enabled thousands of readers to acquire the book. The same methods of distribution will be strictly adhered to in the future.

A past experience of years devoted to the welcome task of supplying the public with useful information, has qualified me to judge of their requirements, and I can say without self laudation that the present work is the result of prolonged and continuous labour, and is in every way equal to the exacting requirements of the age.

G. W. O.

LONDON, *October*, 1895.

OGILVIE'S
ENCYCLOPÆDIA OF USEFUL INFORMATION
AND
ATLAS OF THE WORLD.

USEFUL TABLES.

TABLE SHOWING THE SQUARE FEET AND THE FEET SQUARE OF FRACTIONS OF AN ACRE.

Fractions of an acre.	Square Feet.	Feet Square.
1/16	2722½	52½
1/8	5445	73¾
1/4	10890	104½
1/3	14520	120½
1/2	21780	147½
1	43560	208¼
2	87120	295¼

The oldest London theatres are: Sadlers' Wells, started as an orchestra assembly room in 1683; Her Majesty's, opened in 1705; Haymarket, 1720; Covent Garden, 1732; Astley's, 1773; Surrey (as a circus), 1782; and Lyceum, 1795.

SIZE OF AN ACRE IN VARIOUS COUNTRIES.

The English statute acre consists of 4,840 square yards. The chain with which land is measured is 22 yards long, and a square chain will contain 22 by 22, or 484 yards; so that 10 square chains make an acre. The acre is divided into 4 roods, a rood into 40 perches, and a perch contains 30¼ square yards. The Scotch acre is larger than the English, and the Irish than the Scotch. 121 Irish acres = 196 English nearly; 48 Scotch acres = 61 English. The following table shows the values of the more important corresponding measures compared with the English acres, it being figured as 1·00. The German morgen below are becoming obsolete, as the German Empire has adopted the French metrical system.

Austria, Joch.	1·42	Irish	1·62	Saxony, Morgen	1·36
Baden	0·89	Naples, Moggia	0·83	Scotch	1·27
Belgium, Hectare	2·47	Poland, Morgen	1·38	Spain, Fanegada	1·06
France, Hectare	2·47	Portugal, Geira	1·43	Sweden, Tunneland	1·13
France, Arpent	0·99	Prussia, Little Morgen	0·63	Switzerland, Faux	1·62
Greek Plethron (ancient)	0·23	Prussia, Great Morgen	1·40	,, Geneva, Arpent	1·27
Hamburg, Morgen	2·38	Russia, Deciatina	2·70	Tuscany, Saccata	1·27
Hanover	0·64	Roman Jugerum (ancient)	0·66	United States, English acre	1·00
Holland	2·10	Sardinia, Giornate	0·93	Wurtemberg, Morgen	2·40

TABLE SHOWING THE NUMBER OF SEEDS IN ONE POUND, AND WEIGHT PER BUSHEL.

NAME.	No. of Seeds per lb.	No. lbs. per bush.	NAME.	No. of Seeds per lb.	No. lbs. per bush.
Wheat	10,500	58 to 64	Mustard (white)	75,000	57
Barley	15,400	48 to 56	Cabbage seed	128,000	52
Oats	20,000	38 to 42	Mangel wurzel	24,600	20 to 24
Rye	23,000	56 to 60	Parsnip seed	97,000	14
Vetches	8,300	60 to 63	Carrot seed	257,000	9
Lentils	8,200	58 to 60	Lucern seed	205 000	58 to 60
Beans	600 to 1.300	60 to 65	Clover (red)	249,600	60 to 63
Peas	1,800 to 2,000	60 to 65	,, (white)	686,000	59 to 62
Flax seed	108,000	50 to 60	Rye-grass (perennial)	334,000	20 to 28
Turnip seed	155.000	50 to 56	,, (Italian)	272,000	13 to 18
Rape seed	118,000	50 to 56	Sweet vernal grass	923,000	8

TABLE SHOWING THE NUMBER OF HILLS OR PLANTS ON AN ACRE OF LAND, FOR ANY DISTANCE APART, FROM TEN INCHES TO SIX FEET—THE LATERAL AND LONGITUDINAL DISTANCES BEING UNEQUAL.

	10 in.	12 in.	15 in.	18 in.	20 in.	2 ft.	2½ ft.	3 ft.	3½ ft.	4 ft.	4½ ft.	5 ft.	5½ ft.	6 ft.
10 in.	62626													
12 „	52272	43560												
15 „	41817	34848	27878											
18 „	34848	29040	23232	19360										
20 „	31363	26136	20908	17424	15681									
2 feet	26136	21780	17424	14520	13068	10890								
2½ „	20908	16424	13939	11616	10454	8712	6969							
3 „	17424	14520	11616	9680	8711	7260	5808	4840						
3½ „	14935	12446	9953	8197	7467	6223	4976	4148	3565					
4 „	13068	10890	8712	7260	6534	5445	4356	3630	3111	2722				
4½ „	11616	9680	7744	6453	5808	4840	3872	3226	2767	2420	2151			
5 „	10454	8712	6336	5808	5227	4356	3484	2904	2489	2178	1936	1742		
5½ „	9504	7920	6069	5280	4752	3960	3168	2640	2263	1980	1760	1584	1440	
6 „	8712	7260	5808	4840	4356	3630	2904	2420	2074	1865	1630	1452	1320	1210

TABLE SHOWING THE QUANTITY OF GARDEN SEEDS REQUIRED TO PLANT A GIVEN SPACE.

Designation.	Space and Quantity of Seeds.
Asparagus .	1 oz. produces 1000 plants, requires bed 12 ft. sq.
„ Roots .	1000 plant a bed 4 feet wide, 225 feet long.
English Dwarf Beans	1 quart plants from 100 to 150 feet of row.
French „ „	1 „ „ 250 or 350 of row.
Beans, pole, large .	1 „ „ 100 hills.
„ „ small .	1 „ „ 300 „ or 250 feet of row.
Beets . . .	10 lbs. to an acre; 1 oz. plants 150 ft. of row.
Broccoli and Kale .	1 oz. plants 2500 plants, and requires 40 sq. ft.
Cabbage . . .	Early sorts same as broccoli, requires 60 sq. ft.
Cauliflower . .	The same as cabbage.
Carrot . . .	1 oz. to 150 of row.
Celery . . .	1 oz. gives 7000 plants, and requires 8 sq. ft.
Cucumber . .	1 oz. for 150 hills.
Cress . . .	1 oz. sows a bed 16 feet square.
Egg Plant . .	1 oz. gives 2000 plants.
Endive . . .	1 oz. „ 3000 „ and requires 80 ft.
Leek . . .	1 oz. „ 2000 „ „ 60 „
Lettuce . . .	1 oz. „ 7000 „ „ 120 „
Melon . . .	1 oz. for 120 hills.
Nasturtium . .	1 oz. sows 25 feet of row.
Onion . . .	1 oz. „ 200 „ „
Okra . . .	1 oz. „ 200 „ „
Parsley . . .	1 oz. „ 200 „ „
Parsnip . . .	1 oz. „ 250 „ „
Peppers . . .	1 oz. gives 2500 plants.
Peas . . .	1 quart sows 120 feet of row.
Pumpkin . . .	1 oz. to 50 hills.
Radish . . .	1 oz. to 100 feet.
Salsify . . .	1 oz. to 150 „ of row.
Spinach . . .	1 oz. to 200 „ „
Squash . . .	1 oz. to 75 hills.
Tomato . . .	1 oz. gives 2500 plants, requiring bed of 80 feet.
Turnip . . .	1 oz. to 2000 feet.
Water Melon . .	1 oz. to 50 hills.

THE QUANTITY OF SEED REQUIRED TO THE ACRE.

Designation.	Quantity of seed.
Wheat . . .	1¼ to 2 bush.
Barley . . .	1½ to 2½ „
Oats	2 to 4 „
Rye	1 to 2 „
Buckwheat . .	¾ to 1⅓ „
Millet . . .	1 to 1⅓ „
Corn	¼ to 1 „
Beans . . .	1 to 2 „
Peas	2½ to 3½ „
Hemp . . .	1 to 1½ „
Flax	½ to 2 „
Rice	2 to 2½ „
Broom Corn . .	1 to 1½ „
Potatoes . . .	5 to 10 „
Timothy . . .	12 to 24 quarts.
Mustard . . .	8 to 20 „
Herd Grass . .	12 to 16 „
Flat Turnip . .	2 to 3 lbs.
Red Clover . .	10 to 16 „
White Clover . .	3 to 4 „
Blue Grass . .	10 to 15 „
Orchard Grass . .	20 to 30 „
Carrots . . .	4 to 5 „
Parsnips . . .	6 to 8 „

SHOWING QUANTITY PER ACRE WHEN PLANTED IN ROWS OR DRILLS.

Broom Corn . .	1 to 1½ bush.
Beans . . .	1½ to 2 „
Peas	1½ to 2 „
Onions . . .	4 to 5 lbs.
Carrots . . .	2 to 2½ „
Parsnips . . .	4 to 5 „
Beets . . .	4 to 6 „

TO MEASURE GRAIN IN THE GRANARY.

Divide the cubic feet by 56, multiply by 45, and the result will be struck measure in bushels.

TABLE SHOWING THE NUMBER OF PLANTS, HILLS, OR TREES CONTAINED IN AN ACRE AT EQUAL DISTANCES APART, FROM 3 INCHES UP TO 66 FEET.

Distance apart.	No. of plants.	Distance apart.	No. of plants.	Distance apart.	No. of plants.	Distance apart.	No. of plants.
3 inches by 3 inches	696,960	3½ feet by 3½ feet .	3,555	6 feet by 6 feet .	1,210	16½ feet by 16½ feet .	160
4 „ by 4 „	392,040	4 „ by 1 foot .	10,890	6½ „ by 6½ „ .	1,031	17 „ by 17 „ .	150
6 „ by 6 „	174,240	4 „ by 2 feet .	5,445	7 „ by 7 „ .	881	18 „ by 18 „ .	134
9 „ by 9 „	77,440	4 „ by 3 feet .	3,630	8 „ by 8 „ .	680	19 „ by 19 „ .	120
1 foot by 1 foot .	43,560	4 „ by 4 feet .	2,722	9 „ by 9 „ .	537	20 „ by 20 „ .	108
1½ feet by 1½ feet .	19,360	4½ „ by 4½ feet .	2,151	10 „ by 10 „ .	436	25 „ by 25 „ .	69
2 „ by 1 foot .	21,780	5 „ by 1 foot .	8,712	11 „ by 11 „ .	360	30 „ by 30 „ .	48
2 „ by 2 feet .	10,890	5 „ by 2 feet .	4,356	12 „ by 12 „ .	302	33 „ by 33 „ .	40
2½ „ by 2½ feet .	6,960	5 „ by 3 feet .	2,904	13 „ by 13 „ .	257	40 „ by 40 „ .	27
3 „ by 1 foot .	14,520	5 „ by 4 feet .	2,178	14 „ by 14 „ .	222	50 „ by 50 „ .	17
3 „ by 2 feet .	7,260	5 „ by 5 feet .	1,742	15 „ by 15 „ .	193	60 „ by 60 „ .	12
3 „ by 3 feet .	4,840	5½ „ by 5½ feet .	1,417	16 „ by 16 „ .	170	66 „ by 66 „ .	10

VALUE OF FOOD FOR DOMESTIC ANIMALS.

The figures below give the comparative number of pounds of each substance to equal in effect that of any standard food—as, for instance, that of Good Hay, to give a certain nourishment, requires 100 lbs.

The following will give the same effect by the use of

Good Clover Hay .	95 lbs.	Carrots . .	280 lbs.	Peas . . .	44 lbs.	Indian Corn .	56 lbs.
Rye Straw . .	355 „	Beets . . .	346 „	Beans . .	46 „	Oats . . .	59 „
Oat Straw . .	220 „	Ruta Bagas .	262 „	Rye . . .	49 „	Buckwheat . .	64 „
Potatoes . .	195 „	Wheat . .	43 „	Barley . .	51 „	Oil Cake . .	64 „

CONSUMPTION OF HAY.

The hay consumed by different animals does not vary greatly from three pounds daily for each hundred pounds weight of the animals. The following table is the result of various experiments by different persons, and will be useful for farmers who wish to determine by calculation beforehand, how their hay will hold out for the winter; 500 cubic feet of timothy hay, in a full bay, being about one ton:—

Working Horses	3·08 pounds.	Steers	2·84 pounds.
Working Oxen	2·40 „	Dry Cows	2·42 „
Milk Cows (Boussingault's) . . .	2·25 „	Pigs (estimated)	3·00 „
Milk Cows (Lincoln's)	2·40 „	Sheep	3·00 „
Young Growing Cattle	3·08 „		

All the articles enumerated in these food tables are estimated as of good quality. If the fodder be of poor quality, more must be allowed.

WEIGHT OF A CUBIC FOOT,

of various substances, from which the bulk of a load of one ton may be easily calculated:—

Cast Iron	450 pounds.	Common Soil, compact, about . . .	124 pounds.
Water	62 „	Clay, about	135 „
White Pine, seasoned, about . . .	30 „	Clay, with stones, about	160 „
White Oak „ „	52 „	Brick, about	125 „
Loose Earth, about	95 „	Stone, about	170 „

BULK OF A TON OF DIFFERENT SUBSTANCES.

23 cubic feet of Sand make about a ton. | 18 cubic feet of Earth make about a ton.

17 cubic feet of Clay make about a ton.

18 cubic feet of Gravel or Earth, before digging, make 27 cubic feet when dug; or, the bulk is increased as three to two.

CAPACITY OF SOILS FOR WATER.

The following substances are saturated when they contain of their own weight:—

Sand	about 24 per cent. of water.
Calcareous Sand	„ 28 „ „
Loamy Soil	„ 38 „ „
Clay Loam	„ 47 „ „
Peat	„ 80 „ „

TO MEASURE CORN IN THE CRIB.

Multiply the length, breadth and height together, in feet, to obtain the cubic feet; multiply this product by 4, and strike off the right figure; and the result will be shelled bushels, nearly.

TABLE SHOWING THE NUMBER OF LOADS OF MANURE, AND THE NUMBER OF HEAPS TO EACH LOAD, REQUIRED TO EACH ACRE, THE HEAPS AT GIVEN DISTANCES APART.

Distance of heaps apart, in yards.	NUMBER OF HEAPS IN A LOAD.									
	1	2	3	4	5	6	7	8	9	10
3	538	269	179	134	108	89½	77	67	60	54
3½	395	168	132	99	79	66	56½	49½	44	39½
4	239	151	101	75½	60½	50½	43¼	37¾	33½	30¼
4½	233	120	79½	60	47¾	39¾	34¼	30	26½	24
5	194	97	64½	48½	38¾	32¼	27¾	24¼	21½	19¼
5½	160	89	53½	40	32	26¾	22¾	20	17¾	16
6	131	67	44¾	33½	27	22½	19¼	16¾	15	13½
6½	115	57½	38¼	28¾	23	19	16¼	14¼	12¾	11½
7	99	49½	33	24¾	19¾	16½	14	12¼	11	10
7½	86	43	28¾	21½	17¼	14¼	12¼	10¾	9½	8½
8	75½	37¾	25¼	19	15¾	12½	10¾	9½	8½	7½
8½	67	33½	22¼	16¾	13½	11¼	9½	8½	7½	6¾
9	60	30	20	15	12	10	8½	7¾	6¾	6
9½	53½	26¾	18	13½	10¾	9	7¾	6¾	6	5¼
10	48½	24¼	16¼	12	9¾	8	7	6	5½	4¾

TABLE SHOWING THE RELATIVE VALUES OF DECOMPOSED VEGETABLES AS MANURES, FROM THE INORGANIC MATTER THEY CONTAIN.

Made into manure returns to the soil	Inorganic matter. lbs. lbs.
1 ton Wheat Straw ,, ,, ,,	70 to 136
1 ,, Oat ,, ,, ,, ,,	100 to 180
1 ,, Hay ,, ,, ,, ,,	100 to 200
1 ,, Barley ,, ,, ,, ,,	100 to 120
1 ,, Pea ,, ,, ,, ,,	100 to 110
1 ,, Bean ,, ,, ,, ,,	100 to 130
1 ,, Rye ,, ,, ,, ,,	50 to 100
1 ,, Dry Potato-tops ,, ,, ,,	400
1 ,, Dry Turnip-tops ,, ,, ,,	370
1 ,, Rape Cake ,, ,, ,,	120
1 ,, Malt Dust ,, ,, ,,	180
1 Dried Seaweed ,, ,, ,,	560

TABLE SHOWING THE RELATIVE VALUE OF DECOMPOSED VEGETABLES AS MANURES, FROM THE NITROGEN THEY CONTAIN.

100 lbs. of Farmyard Manure is equal to—

130 lbs.	Wheat Straw Manure.
150 ,,	Oat ,, ,,
180 ,,	Barley ,, ,,
85 ,,	B'wheat ,, ,,
45 ,,	Pea ,, ,,
50 ,,	Wheat Chaff ,,
80 ,,	Green Grass ,,
75 ,,	Potato-tops ,,
80 ,,	Fresh Seaweed ,,
20 ,,	Dried ,, ,,
26 ,,	Bran of Wheat or Corn Manure.
13 ,,	Malt Dust ,,
8 ,,	Rape Cake ,,
250 ,,	Pine Sawdust ,,
180 ,,	Oak ,, ,,
25 ,,	Coal Soot ,,

TABLE SHOWING THE NUMBER OF RAILS, STAKES, AND RIDERS REQUIRED FOR EACH 10 RODS OF FENCE.

Length of rail.	Deflection from right line.	Length of panel.	No. of panels.	Number of rails for each 10 rods.			Number of stakes.	Number of riders (single.)
Feet.	Feet.	Feet.	Feet.	5 rails high.	6 rails high.	7 rails high.		
12	6	8	20⅝	103	123	144	42	21
14	7	10	16½	83	99	116	34	17
16½	8	12	13¾	69	84	95	28	14

TABLE SHOWING THE NUMBER OF RAILS AND POSTS REQUIRED FOR 10 RODS OF POST AND RAIL FENCE.

Length of rail.	Length of panel.	Number of panels.	Number of posts.	Number of rails for each 10 rods.			
Feet.	Feet.			5 rails high.	6 rails high.	7 rails high.	8 rails high.
10	8	20⅝	21	103	123	144	165
12	10	16½	17	83	99	116	133
14	12	13¾	14	69	84	95	109
16½	14½	11⅓	12	57	69	81	93

TABLE SHOWING THE LABOUR ONE HORSE IS ABLE TO PERFORM AT DIFFERENT RATES OF SPEED ON CANALS, RAILROADS, AND TURNPIKES. DRAWING FORCE, 83⅓ LBS.

Speed per hour—miles.	Duration of day's work—hours.	Useful effect for 1 day in tons, drawn 1 mile.		
		On canal—tons.	On a rail-road—tons.	On a turn-pike—tons.
2½	11½	520	115	14
3	8	243	92	12
3½	6	154	82	10
4	4½	102	72	9
5	2 9/10	52	57	7·3
6	2	30	48	6
7	1½	19	41	5
8	1⅛	12·8	36	4·5
9	9/10	9·0	32	4
10	¾	6·5	28·8	36

NAVIES OF EUROPE.

The comparative strength of the navies of Europe, as it will be in 1894, is thus summed up in an article in the German *Heeres Zeitung* :—

Great Britain—76 ironclads (including 26 coast-defence vessels), 90 protected ships, 200 unprotected ships, 150 torpedo boats.

Germany—40 ironclads (including 14 of moderate size for coast defence), 10 protected ships, 52 unprotected ships, 150 torpedo boats.

France—48 ironclads (including 16 coast-defence vessels), 14 protected ships, 150 unprotected ships, 130 torpedo boats.

Italy—19 ironclads (including six coast-defence vessels), 17 protected ships, 53 unprotected ships, 133 torpedo boats.

Russia—27 ironclads (including 14 for coast defence), 8 protected ships, 60 unprotected ships, 125 torpedo boats.

TABLE SHOWING THE PROPORTION OF SOLID MATTER AND WATER IN 100 PARTS EACH OF THE FOLLOWING ARTICLES OF DIET.

Designation.	Solid Matter.	Water.	Designation.	Solid Matter.	Water.	Designation.	Solid Matter.	Water.	Designation.	Solid Matter.	Water.
Wheat . .	87	13	Wht. Bread	51	49	Pork . .	24	76	Beet . .	13	87
Peas . .	87	13	Mutton .	29	71	Codfish .	21	79	Milk . .	13	87
Rice . .	86	14	Chicken .	27	73	Blood .	20	80	Oysters .	13	87
Beans . .	86	14	Lean Beef .	26	74	Trout .	19	81	Cabbage .	8	92
Rye . .	86	14	Eggs . .	26	74	Apples .	18	82	Turnips .	7	93
Corn . .	86	14	Veal . .	25	75	Pears .	16	84	Watermelon	5	95
Oatmeal .	74	26	Potatoes .	25	75	Carrots .	13	87	Cucumber .	3	97

TABLE SHOWING THE CONTENTS OF CIRCULAR CISTERNS IN BARRELS FOR EACH FOOT IN DEPTH.

5 feet	4·66	8 feet	11·93
6 „	6·74	9 „	15·10
7 „	9·13	10 „	18·65

VALUE OF DIFFERENT KINDS OF WOOD AS FUEL.

The celebrated experiments of Marcus Bull gave the following results, showing the amount required to throw out a given quantity of heat :—

Hickory	4 cords.	Pitch Pine	9⅐ cords.
White Oak	4¾ „	White „	9⅕ „
Hard Maple	6⅔ „	Anthracite Coal	4 tons.
Soft Maple	7⅕ „	Bituminous Coal	5 „

TABLE SHOWING THE CONTENTS OF CIRCULAR CISTERNS, FROM 1 FOOT TO 25 FEET IN DIAMETER, FOR EACH 10 INCHES IN DEPTH.

Diameter.	Gallons.
1	4·896
1½	11·015
2	19·583
2½	30 545
3	44·064
3½	59·980
4	78·333
4½	99·116
5	122·400
5½	148·546
6	176·253
6½	206·855
7	239·906
7½	271·072
8	313·340
8½	353·735
9	396·573
9½	441·861
10	489·600
11	592·400
12	705·000
13	827·450
14	959·613
15	1101·610
20	1958·421
25	3059·034

TABLE SHOWING THE PERIOD OF REPRODUCTION AND GESTATION OF DOMESTIC ANIMALS.

Designation.	Proper age for reproduction.	Period of the power of reproduction in years.	Number of females for one male.	Period of gestation and incubation.		
				Shortest period, days.	Mean period, days.	Longest period, days.
Mare	4 years.	10 to 12	. . .	322	347	419
Stallion	5 ”	12 to 15	20 to 30	...	...	...
Cow	3 ”	10 to 14	. . .	240	283	321
Bull	3 ”	8 to 10	30 to 40	...	...	...
Ewe	2 ”	6	. . .	146	154	161
Ram	2 ”	7	40 to 50	...	...	...
Sow	1 ”	6	. . .	109	115	142
Boar	1 ”	6	6 to 10	...	...	...
She Goat	2 ”	6	. . .	150	156	163
He Goat	2 ”	5	20 to 40	...	...	...
She Ass	4 ”	10 to 12	. . .	365	380	391
He Ass	5 ”	12 to 15	. . .	...	...	...
She Buffalo	. . .	8	. . .	281	308	335
Bitch	2 ”	8 to 9	. . .	55	60	63
Dog	2 ”	8 to 9	. . .	...	...	...
She Cat	1 ”	5 to 6	. . .	48	50	56
He Cat	1 ”	9 to 10	5 to 6	...	...	...
Doe Rabbit	6 months.	5 to 6	. . .	20	28	35
Buck Rabbit	6 ”	5 to 6	30	...	...	...
Cock	6 ”	5 to 6	12 to 15	...	...	...
Hen	. . .	5 to 6	. . .	19	21	24
Turkey	. . .	3 to 5	. . .	24	26	30
Duck	. . .	. . .	. . .	28	30	32
Goose	. . .	. . .	. . .	27	30	33
Pigeon	. . .	. . .	. . .	16	18	20
Pea Hen	. . .	. . .	. . .	25	28	30
Guinea Hen	. . .	. . .	. . .	20	23	25
Swan	. . .	. . .	. . .	40	42	45

FORCE OF WIND.

The force exerted by windmills will vary greatly with the velocity of the wind The following table shows the pressure against a fixed surface; from the velocity given in this table, the average velocity of the sails must be deducted, and the remainder will show the real force exerted:—

Velocity. Miles an hour.	Pressure in lbs. on square ft.	Description.
1	·005	Hardly perceptible.
2	·020	Just perceptible.
3	·045	
4	·089	Light breeze.
5	·125	
6	·180	Gentle, pleasant wind.
7	·320	
10	·500	Pleasant, brisk wind.
15	1·125	
20	2·000	Very brisk.
25	3 125	

Velocity. Miles an hour.	Pressure in lbs. on square ft.	Description.
30	4·500	Strong, high wind.
35	6·125	
40	8·000	Very high.
45	10·125	
50	12·500	Storm or tempest.
60	18·000	Great storm.
80	32·000	Hurricane.
100	50·000	Tornado, tearing up trees and sweeping off buildings.

TEMPERATURE FOR THE RISING OF CREAM.

The temperature of the surrounding air has a great effect upon the time required for the rising of the cream. Experiment has demonstrated that, with the thermometer at

80 deg. all the cream will rise in 10 hours.
77 ” ” ” 12 ”
68 ” ” ” 18 ”
55 deg. all the cream will rise in 24 hours.
50 ” ” ” 36 ”
45 ” ” ” 43 ”

VELOCITY OF WATER IN TILE DRAINS.

An acre of land in a wet time contains about 1,000 spare hogsheads of water. An underdrain will carry off the water from a strip of land about two rods wide, and one 80 rods long will drain an acre.

The following table will show the size of the tile required to drain an acre in two days' time (the longest admissible) at different rates of descent, or the size of any larger area:—

Diameter of Bore.	Rate of Descent.	Velocity of current per second.	Hogsheads discharged in 24 hours.
2 inches	1 foot in 100	22 inches	400
2 "	1 " 50	32 "	560
2 "	1 " 20	51 "	900
2 "	1 " 10	73 "	1,290
3 "	1 " 100	27 "	1,170
3 "	1 " 50	38 "	1,640
3 "	1 " 20	67 "	3,100
3 "	1 " 10	84 "	3,600
4 "	1 " 100	32 "	2,500
4 "	1 " 50	45 "	3,500
4 "	1 " 20	72 "	5,600
4 "	1 " 10	100 "	7,800

A deduction of one-third to one-half must be made for the roughness of the tile or imperfection of laying. The drain must be of some length to give the water velocity, and these numbers do not, therefore, apply to very short drains.

TABLE SHOWING THE RATE OF SPEED PER HOUR AND SECOND OF VARIOUS BODIES.

	Per hr.	Per sec.		Per hr.	Per sec.		Per hr.	Per sec.
A man travels	3 miles	4 feet.	Sailing vessels run	10 miles	14 feet.	A storm moves	36 miles	52 feet.
A horse trots	7 "	10 "	Slow rivers flow	3 "	4 "	A hurricane moves	80 "	117 "
A horse runs	20 "	29 "	Rapid rivers flow	7 "	10 "	A rifle ball moves	1000 "	1466 "
Steamboats run	18 "	26 "	A moderate wind blows	7 "	10 "			

TABLE SHOWING HOW MANY SACKS ARE REQUIRED AT DIFFERENT WEIGHTS TO PUT UP A BARREL OF FLOUR

No. lbs. in Sack.	Sacks in barrel.	lbs.	No. lbs. in Sack.	Sacks in barrel.	lbs.	No. lbs. in Sack.	Sacks in barrel.	lbs.
5	39	1	40	4	36	75	2	46
10	19	6	45	4	16	80	2	36
15	13	1	50	3	46	85	2	26
20	9	16	55	3	31	90	2	16
25	7	21	60	3	16	95	2	6
30	6	16	65	3	1	100	1	96
35	5	21	70	2	56			

ROPES.

TABLE SHOWING WHAT WEIGHTS HEMP ROPE WILL BEAR WITH SAFETY.

Circumference.	Pounds.	Circumference.	Pounds.	Circumference.	Pounds.
1 inch.	200	2¼ "	1012·5	3½ "	2450
1¼ "	312·5	2½ "	1250	3¾ "	2812·5
1½ "	450	2¾ "	1512·5	4 "	3200
1¾ "	612·5	3 "	1800	5 "	5000
2 "	800	3¼ "	2112·5	6 "	7200

NOTE.—A square inch of hemp fibres will support a weight of 3288 pounds. The maximum strength of a good hemp rope is 6400 pounds to the square inch. Its practical value not more than one-half this strain. Before breaking, it stretches from one-fifth to one-seventh, and its diameter diminishes one-fourth to one-seventh. The strength of manilla is about one-half that of hemp. White ropes are one-third more durable.

SIZE OF NAILS.

The following table will show at a glance the length of the various sizes, and the number of nails in a pound. They are rated 3-penny up to 20-penny:—

No.	Length in inches.	Nails per lb.	No.	Length in inches.	Nails per lb.
2-penny	1	557	8-penny	2½	101
4 „	1¼	535	10 „	2¾	68
5 „	1¾	282	12 „	3	54
6 „	2	177	20 „	3½	34
7 „	2¼	141			

From the foregoing table an estimate of quantity and suitable size for any job of work can easily be made.

GROWTH AND LIFE OF ANIMALS.

	Years.		Years.
Man grows for 20 years, and lives	70 to 100	Deer and Wolf live	20
Horse grows for 5 years, and lives	30	Fox lives	14 to 16
Ass grows for 5 years, and lives	30	Squirrel lives	7
Ox grows for 4 years, and lives	15 to 20	Rabbit lives	7
Cow grows for 4 years, and lives	20	Eagle lives	100
Hog lives	12 to 15	Geese live	20
Sheep lives	10	Hens and Pigeons live	10 to 15
Camel grows for 8 years, and lives	40	Elephant	100
Lion grows for 4 years, and lives	40	Codfish	14 to 17
Dog grows for 2 years, and lives	12 to 14	Eels	10
Cat grows for 1½ years, and lives	9 or 10	Crocodile	100
Hare grows for 1 year, and lives	8	Queen Bees	4
Guinea Pig grows 7 months, and lives	6 or 7	Drones	4 mths.
Beaver lives	30	Worker Bees	6 mths.

RELATIVE HARDNESS OF WOODS.

Taking shell bark as the highest standard of forest trees, and calling that 100, other trees will compare with it as follows:—

Shell Bark Hickory	100	White Hazel	72	Yellow Oak	60	Chestnut	52
Pignut Hickory	96	Apple Tree	70	White Elm	58	Yellow Poplar	51
White Oak	84	Red Oak	60	Hard Maple	56	Butternut	43
White Ash	77	White Beech	65	Red Cedar	56	White Birch	43
Dogwood	75	Black Walnut	65	Wild Cherry	55	White Pine	30
Scrub Oak	73	Black Birch	62	Yellow Pine	54		

RELATIVE VALUE OF FOODS.

One hundred pounds of good hay for stock are equal to:—

Articles.	Pounds.	Articles.	Pounds.	Articles.	Pounds.
Beets, white silesia	669	Potatoes	260	Barley	58
Turnips	469	Carrot leaves (tops)	135	Rye	53½
Rye straw	429	Hay, English	100	Wheat	44½
Clover, red, green	373	Lucerne	89	Oil-cake, linseed	43
Carrots	371	Clover, red, dry	88	Peas, dry	37½
Mangold	368½	Buckwheat	78½	Beans	25
Potatoes, kept in pit	350	Corn	62½		
Oat straw	317	Oats	59		

DISTANCES AROUND THE WORLD.

The following includes the principal stopping places, and distances between them, in a direct line around the world:—

Liverpool to New York	3,000 miles	Bombay to Aden	1,664 miles
New York to San Francisco	3,450 „	Aden to Suez	1,308 „
San Francisco to Yokohama	4,764 „	Suez to Alexandria	250 „
Yokohama to Hong Kong	1,620 „	Alexandria to Marseilles	1,300 „
Hong Kong to Singapore	1,150 „	Marseilles to Paris	536 „
Singapore to Calcutta	1,200 „	Paris to London	316 „
Calcutta to Bombay	1,409 „	London to Liverpool	205 „

DICTIONARY OF STATISTICS
AND
READY REFERENCE TABLES.

The following tables of reference, supplemented by explanatory reading matter, have been prepared with the utmost care from the very latest official and most authentic sources, and adapted to the scope of OGILVIE'S ENCYCLOPÆDIA, and will give to the work inestimable value for all practicable purposes.

ABLE-BODIED.—The proportion of men capable of bearing arms in various countries is as follows:—

	Per cent. of Population.		Per cent. of Population.
United States	23	France	27
England	23	Austria	25
Scotland	22	Germany	24
Ireland	22	Italy	25
Belgium	25	Sweden	25
Holland	25	Norway	24
Spain	26	Greece	23
Denmark	25		

ACCIDENTAL DEATHS.—The ratio of deaths by accident per 1,000 deaths in the various countries is—

United States	39	France	12
England	30	Germany	16
Scotland	31	Russia	6
Ireland	18	Austria	10
Italy	5	Denmark	12
Switzerland	28	Sweden	26
Spain	12	Norway	33
Belgium	17		

ACQUISITION OF TERRITORY.—The increase in area of the United States, by treaty, or otherwise, with amount of purchase money, is as follows:—

YEAR.	HOW.	FROM	ACQUISITION.	SQ. MILES.	COST.
1776—1782	By War.	England.	The Original thirteen States.	820,680	War Revolution, 135,193,703 dollars.
1803	„ Purchase.	France.	Louisiana.	899,579	15,000,000 „
1819	„ Purchase.	Spain.	Florida.	69,900	5,000,000 „
1845	„ Admission.	Mexico.	Texas.	318,000	Debt assumed, 7,500,000 „
1846	„ Treaty.	England.	Oregon.	308,052	
1846—1848	„ War.	Mexico.	California and New Mexico.	522,955	Mexican War, 66,000,000 „ Paid to Mexico, 15,000,000 „
1853	„ Purchase.	Mexico.	Part of Arizona and New Mexico.	45,535	10,000,000 „
1867	„ Purchase.	Russia.	Alaska.	577,390	7,200,000
				3562,091	

AIR.—In its pure state it is composed thus: Nitrogen, 77; oxygen, 21; other components, 2; total, 100.

The percentage of *oxygen* varies as follows: At the sea-shore, 21·00; confined houses, 20·75; mines, 20·50; when candles go out, 18·50.

The percentage of *carbonic acid* ranges as follows: In country, ·03; in town, ·04; in hospitals, ·05; in fogs, ·07; in crowded streets, ·13; in places of amusement, as halls and theatres, ·30.

Each *adult* inhales a gallon of air per minute, and consumes daily 30 oz. of oxygen. For the conversion of this oxygen a certain amount of food is required—say 13 oz. of carbon for a male, and 11 oz. for a female—equivalent to 3 lbs. bread and 2½ lbs. respectively.

ALCOHOL.—The degrees in wines and liquors are: Beer, 4·0; porter, 4·5; ale, 7·4; cider, 8·6; perry, 8·8; elder, 9·3; Moselle, 9·6; Tokay, 10·2; Rhine, 11·0; Orange, 11·2; Bordeaux, 11·5; hock, 11·6; gooseberry, 11·8; champagne, 11·2; claret, 13·3; Burgundy, 13·6; Malaga, 17·3; Lisbon, 18·5; Canary, 18·8; sherry, 19·0; Vermouth, 19·0; Cape, 19·2; Malmsey, 19·7; Marsala, 20·2; Madeira, 21·0; port, 23·2; curacoa, 27·0; aniseed, 33·0; Maraschino, 34·0; Chartreuse, 43·0; gin, 51·6; brandy, 53·4; rum, 53·7; Irish whisky, 53·9; Scotch, 54·3.

Spirits are said to be "proof" when they contain 57 per cent. The maximum amount of alcohol, says Parkes, that a man can take daily without injury to his health is that contained in 2 ounces of brandy, ¼ pint of sherry, ½ pint of claret, or 1 pint of beer.

AGE.—A man's working life is divided into four decades:—

Twenty to 30, bronze; 30 to 40, silver; 40 to 50, gold; 50 to 60, iron.

Intellect and judgment are strongest between 40 and 50. The percentages of population to age in various countries are shown thus:—

COUNTRY.	PERCENTAGE OF POP.			Average age of all living years.
	Under 20 years.	From 20 to 60.	Over 60.	
United States	50	45	5	24·9
England	46	47	7	27·1
Scotland	46	45	9	27·4
Ireland	46	43	11	28·6
France	36	52	12	32·2
Germany	43	49	8	28·0
Italy	44	49	7	27·6
Austria	43	50	7	27·7
Greece	48	47	5	25·5
Spain	42	52	6	27·2
Brazil	46	45	9	27·3
Belgium	40	50	10	29·7
Holland	43	49	8	28·3
Denmark	42	50	8	28·4
Sweden	43	49	8	28·0
Norway	43	48	9	28·0

ALPACA.—This wool was first manufactured at Saltaire, near Leeds, in 1836. Its manufacture in the United States is confined wholly to the State of Massachusetts.

ANIMALS.—The following table gives their average weight and length of life:—

	Weight (lbs.)	Y'rs of Life.		Weight (lbs.)	Y'rs of Life.
Rabbit	5	5	Cow	750	25
Dog	10	12	Ox	900	25
Sheep	70	12	Horse	1,000	27
Pig	150	10	Camel	1,200	40
Lion	500	40	Elephant	6,000	100

AQUEDUCTS.—Rome, in the time of the Cæsars, had 9 aqueducts, measuring 249 miles in the aggregate. They poured into the city 329 million gallons daily—or 200 gallons per inhabitant. The great aqueduct of Peru, built by the Incas, was 360 miles long. Among modern works the most famous are:—

Name.	Miles.	Million gallons daily.	Cost of Work.
Croton (New York)	41	88	£1,800,000
Madrid	47	40	2,250,000
Marseilles	51	60	4,500,000
Glasgow	34	50	1.550 000
Manchester	20	40	1,050,000

ARMY.—The standing armies of Europe have increased 60 per cent. in 50 years, while ratio of combatants to population has remained unchanged during the past 25 years—at the same time the expenditures for armies and navies have risen 30 per cent. The armies and navies of the Continent of Europe, absorb ten days' earnings of the population each year—those of Great Britain only seven days' earnings. According to Napoleon Bonaparte, the proportions of an army should be 70 per cent. infantry, 17 per cent. cavalry, and 13 per cent. between artillery, engineers, and train.

In active service the death-rate among officers is heavier than among the rank and file. The Duke of Wellington's army-roll, from 1811 to 1814, showed:—

	Officers.	Men.
Killed	14·5	10·2
Wounded	81·0	49·0
Died of disease	13·0	38·0

ARTILLERY.—There are about 37,000 pieces of cannon, of which only 20,000 can be said to be in use.

Countries.	Army.	Navy.	Fortifications, Arsenals, etc.	Total.
France	1,983	2,834	2,800	7.572
Germany	2,040	570	2,770	5.380
Russia	2,287	836	2,010	5,124
Great Britain	702	1,480	2,000	4,182
United States	100	1,055	3,000	4,155
Austria	1,540	320	1,000	2,860
Italy	500	480	500	1,480
Spain	348	525	300	1,173
Norway and Sweden	300	672	100	1,072
Turkey	650	200	100	950
Holland	150	560	120	830
Denmark	1 6	245	170	521
Brazil	50	166	200	416
Japan	120	149	100	369
Portugal	92	178	110	380
Roumania	180	36	94	310
Greece	96	70	110	276
Belgium	204	... ...	40	244
	11,394	10,376	15,524	37,294

At the close of the Franco-German War the Germans took from the French 7,234 pieces of cannon, including 3,485 field pieces and 3,300 fortress guns. The cost of heavy guns is as follows, per ton: Cast iron, £21; Armstrong, £100; Krupp, £170; Whitworth, £171.

BALLOONS.—The most remarkable ascents on record:—

Date.	Aeronaut.	Place of Ascent.	Height, Yards.	Distance, Miles.
1782	Montgolfier	Lyons	2,000	......
1804	Gay Lussac	Paris	7,700	......
1836	Holland	London	......	500
1859	Wise	New York	......	1,150
1862	Glaisher	Wolverhampton	12,000	......

During the siege of Paris, September 1870, to February

1871, there were 64 balloons sent up, containing 91 passengers, 354 pigeons, and 3 million letters (weighing 9 tons).

Banks.—Since 1840 the banking of the world has increased about eleven-fold—that is, three times as fast as commerce, or thirty times faster than population. The three great foreign banks, with shares, capital, real value and dividends, are:—

	Bank of England.	Bank of France.	Bank of Germany.
Number of shares .	145,600	18,300	40,000
Capital . . .	£14,500,000	£7,300,000	£6,000,000
Real value of shares	51,200,000	23,000,000	9,000,000
Ordinary dividend	10 per ct.	15 per ct.	6 per ct.

In Great Britain and her colonies, there are 186 banking companies—120 English, 10 Scotch, 9 Irish, and 47 Colonial—owned by 88,000 shareholders, with an average capital to each shareholder of £1,000 in Scotland, £780 in England, and £720 in Ireland.

In the United States there were, January 1882, 2,132 National Banks and 4,681 State or private banks, with deposits and capital of 2,655 million dollars. The shares of the National Banks are held by 208,000 persons—showing an average banking capital of £700 per shareholder—of 7 million shares, only 26,000 are held in Europe.

Barometer.—The mean height of barometer varies according to latitude, as follows:—

Degree of Latitude.	Barometer.	Degree of Latitude.	Barometer.
10 . .	29·89	45 . .	30·00
20 . .	30·06	50 . .	29·81
30 . .	30·11	60 . .	29·90
40 . .	30·02	67 . .	29 67

It varies according to elevation as follows:—

	Feet above Sea.	Mean Barometer.
Sea level . . .	0	30 00
Rome	151	29·66
Milan	420	29·45
Moscow . . .	984	28·82
Geneva . . .	1,221	28·54
Munich . . .	1,765	27·95
Madrid . . .	1,995	27·72
St. Remy . . .	5,265	24·45
St. Gothard . . .	6,808	23·07
Mexico . . .	7,471	22·52
Bogota . . .	8,731	21·42
Quito	9,541	20·75

Barrenness.—One woman in 20, one man in 30—that is, about 4 per cent. of the population. It is found that one marriage in 20 is barren—say 5 per cent. Among the nobility of Great Britain, 21 per cent. have no children, owing to inter-marriage of cousins, no less than 4½ per cent. of the present nobility being married to cousins.

Battles.—The number placed *hors de combat* are not relatively so large as formerly:—

	Men Engaged.	Hors de Combat.	Ratio per cent.
Thrasymene . .	65,000	17,000	27
Cannæ . . .	146,000	52,000	34
Bannockburn . .	135,000	38,000	28
Agincourt . .	62,000	11,400	18
Cressy . . .	117,000	31,300	27
Marengo . . .	58,000	13,000	22
Austerlitz . .	170,000	23,000	13
Borodino . . .	250,000	78,000	31
Waterloo . . .	145,000	51,000	35
Alma . . .	103,000	8,400	8
Sadowa . . .	402,000	33,000	8
Gravelotte . .	320,000	48,500	15
Buena Vista . .	21,700	3,000	14
Contreras. . .	11,000	2,600	24
Chancellorsville .	160,000	30,000	19
Gettysburg . .	165,000	53,186	32

Bells.—The largest bells are the following, their weight being given in tons: Moscow, 202; Burmah, 117; Pekin, 53; Novgorod, 31; Notre Dame, 18; Rouen, 18; Olmutz, 18; Vienna, 18; St. Paul's, 16; Westminster, 14; Montreal, 12; Cologne, 11; Oxford, 8; St. Peter's, 8.

Bell-metal should have 77 parts copper, and 23 tin.

Bible.—No fewer than 1,326 editions of the Bible were published in the 16th century. In the 17th and 18th centuries it was translated and published in many languages by the polyglot press of Propaganda Fide at Rome. In the 19th century the English and American societies have printed, in the Protestant version, 124 million copies of the Bible, or of the New Testament, viz.:—British, 74 million; American, 32 million; other societies, 15 million copies.

The Bible, King James' version, contains 66 books, 1,189 chapters, 31,172 verses, 684,629 words, 3,566,580 letters. The entire Bible, including the Apocrypha of the Old Testament, has 80 books, 1,372 chapters, 46,253 verses, 836,814 words. There are about 42 Apocryphal books of the New Testament, not included in these figures. The middle chapter, and least in the Bible, is Psalm cxvii. The middle verse in the Bible is the eighth of Psalm cxviii. The middle line of the Bible is in 2 Chronicles, iv. 16. The least verse in the Bible is John xi. 35. The word Reverend occurs but once, Psalm cxi. 9.

The Old Testament contains 39 books, 929 chapters, 23,214 verses, 592,439 words, and 2,728,100 letters. The middle book of the Old Testament is Proverbs—the middle chapter Job xxix. The middle verse is 2 Chron. xx. 17. The least verse is 1 Chron. i. 25. The 19th chapter of 2 Kings and the 37th of Isaiah are the same. In Ezra vii. 21 are all the letters of the alphabet, *i* and *j* being considered as one. The name of Jehovah, or Lord, occurs 6,855 times in the Old Testament. The word *and* occurs 5,513 times in the Old Testament.

The Apocrypha (sometimes bound between the Old and New Testament) comprises 14 books, 183 chapters, 6,081 verses, and 152,185 words.

The New Testament contains 27 books, 260 chapters, 7,959 verses, 181,253 words, and 838,380 letters.

The middle book is 2 Thessalonians.

The middle chapters are Rom. xiii., xiv.

The middle verse is Acts xvii. 17.

Birds, Flight of.—The hawk flies 150 miles per hour; the eider duck 90; the rook 60; and the pigeon 50. In 1877 the newspaper *Nationale* of Paris had 16 carrier pigeons which carried dispatches daily between Versailles and Paris in 15 and 20 minutes. In November 1882 some pigeons, in face of strong wind, made the distance of 160 miles from Canton Vaud to Paris in 6½ hours, or 25 miles per hour.

Births.—The total number in Europe, Canada, and the United Stated is 37,169 daily, a total of 13,475,682 yearly, and 3,957,465 in excess of deaths. The greatest increase of fertility from 1870 to 1880 was in Ireland, the greatest decline in Sweden. The average per cent. of twins to 1,000 births is from 8 to 17 per cent. Twins give 108 males to 100 females. The ratio of illegitimacy ranges from 16 per 1,000 births in Greece to 129 in Austria. Families living in the country have 8 per cent. more children than those in towns. Among Jews there are 116 males born to 100 females. Their ratio of illegitimacy is the lowest in the world, barely 2 per cent. After a destructive war the birth of males predominates in a surprising manner.

Blood.—The elements of the human blood are—In man, water, 77·8; albumen, 6·2; colour, 14·1; saline, etc., 1·9; total, 100. In woman, water, 79·6; albumen, 6·4; colour, 12·2; saline, etc., 1·8. The natural temperature in man, 98½ degrees. The amount of iron in the blood of a man is 0·91 oz. per cwt.

Books.—About 100 new works are published daily, or 30,000 per annum, without counting new editions of old works. The average edition of a book being 1,000 copies, it appears from the following statement that the four countries mentioned print 30,000,000 volumes of new books yearly. The annual average of new books in Great Britain is 5,771; Germany, 14,560; United States, 2,500; France, 7,000.

Boots.—The American machine enables a man to make 300 pairs of boots daily, a single factory in Massachusetts turning out as many pairs yearly as 32,000 bootmakers in Paris. There were in 1890 3,400 machines in use, turning out 175,000,000 pairs of boots annually. 190,478,511 pairs of boots and shoes were manufactured in the United States in 1890, nearly 100,000,000 of which were manufactured in Massachusetts.

Brain.—The latest classification of races, according to Bastian and other experts, shows the weight of the brain in ounces, as follows:—Scotch, 50·0; German, 49·6; English, 49·5; French, 47·9; Zulus, 47·5; Chinese, 47·2; Pawnees, 47·1; Italians, 46·9; Hindoo, 45·1; Gipsy, 44·8; Buhrman, 44·6; Esquimaux, 43·9.

Compared with size of body the Esquimaux's is as heavy as the Scotchman's.

The measurement of the part of the skull which holds the brain is stated in cubic inches, thus:—Anglo-Saxon, 105; German, 105; Negro, 96; Ancient Egyptian, 93; Hottentot, 58; Native Australian, 58. In all races the male brain is about 10 per cent. heavier than the female. The highest class of apes have only 16 oz. of brain.

After the age of 50 the brain loses an ounce every 10 years.

Bread.—The analysis of bread gives different results, water and starch being the chief ingredients, each being from 35 to 50 per cent.

A *sack* of flour containing 280 lbs. will make 420 lbs. of bread in the United States, and 368 lbs. in England—that is, 7 lbs. of American are equal to 8 lbs. of English flour. The consumption of bread in pounds each week per inhabitant in United States is 7·5; Great Britain, 6·3; Germany, 11·2; France, 9·7; Russia, 9·4; Austria, 6·0. General average throughout the world, 8·5.

Bridges.—The great historical bridges of the world are as follows:—

Date.	Name.	Over.	Length (feet).
1135	Ratisbon . .	Danube . .	994
1285	St. Esprit .	Rhone . .	2,690
1301	Cordoba . .	Guadalquivir .	460
1354	Verona . .	Po . . .	363
1588	Rialto . .	At Venice .	99
1650	Prague . .	Moldau . .	1,706
1758	Schaffhausen .	Rhine . .	364
1768	Neuilly . .	Seine . .	740

The remarkable iron bridges of the world are as follows:—

Date.	Bridge.	Over.	Length (feet).	Iron (tons).
1779	Coalbrookdale	Severn . .	100	378
1796	Sunderland .	Wear . .	236	260
1819	Southwark .	Thames . .	800	5.780
1825	Menai . .	Menai Straits .	1,050	2.187
1849	Newcastle .	Tyne . .	900	5.050
1850	Britannia . .	Menai Straits .	1,511	9.000
1855	Niagara .	Niagara . .	850	400
1859	Victoria .	St. Lawrence .	7.200	8.230
1860	Pesth Budae .	Danube . .	1.900	7,000
1867	Cincinnati .	Ohio . .	2,252	...
1868	Clifton . .	Niagara . .	1.270	...
1874	St. Louis .	Mississippi .	2.200	4,200
1875	Wezerabad .	Punjaub .	9.300	...
1877	Oporto . .	Douro . .	1,160	1,600
1878	Annan . .	Solway . .	5.120	...
1879	Empress .	Sutlej . .	6.000	6,650
1880	Moerdyk .	Maas . .	4.850	...
1880	Pultowa .	Dnieper . .	3.550	...
1881	Saratov .	Volga . .	1.872	5 150
1882	Benares .	Ganges . .	3.000	...
1883	Brooklyn .	East . .	6,000	34.000
1885	Cantilever .	Niagara . .	895	...
1893	Forth Bridge.	Firth of Forth	8,100	15,000

The Brooklyn bridge was completed at a cost of

£3,100,000, having taken 17 years in construction, during which 20 lives were lost, including the contractor (Roebling). Length, 6,000 feet; width, 85; height above water, 135; weight, 34,000 tons. There are 3,200 tons wire; section, 580 square inches; strength, 75 tons per square inch. There are two towers 274 feet high, and 1,600 feet apart. The central way is 15 feet wide for pedestrians, each of the railways has 16 feet width, and each of the ways for waggons, horses, etc., 18 feet.

The Forth bridge, Scotland, cost £1,500,000; main girder, 5,330 feet; total length, 2,700 yards; heaviest train deflection, 4 inches; wind pressure of 30 pounds per square foot will bend bridge 9 inches aside; superstructure, 42,000 tons of steel; approach, 3,000 tons of iron and 125,000 cubic yards of masonry.

A bridge of great magnitude is proposed at Rio Janeiro; length, 15,000 feet; to cost £1,800,000.

Bricks.—The consumption in the United States is over six hundred millions monthly, against two hundred and fifty million in Great Britain and Colonies—that is, 130 bricks yearly in the United States, to 90 in Great Britain, are used annually for each inhabitant. A 16-horse power machine can make 30,000 bricks daily. Fire-bricks will resist a crushing force varying from 600 to 3,000 pounds per square inch.

Breakwater.—The following are the principal breakwaters:—

Name.	Date.	Yards long.	Cost.
			£
Plymouth .	1812—1814	1,720	1,550,000
Cherbourg .	1784—1857	4,100	3,200,000
Delaware .	...	1,200	...
Alexandria .	1873—1876	2,000	2,550,000

The Plymouth Breakwater has the same quantity of stone, 6,800,000 tons, as the great pyramid of Cheops, and encloses 1,120 acres of harbour, Cherbourg 1,927 acres, and Delaware 420 acres.

Buildings.—The following table gives the name, height, and location of the most remarkable Arches, Cathedrals, Minsters, Monuments, and Pyramids of the world:—

Name.	Location.	Height, Feet.	Date.
Eiffel Tower	Paris . .	989	1888
Washington Monument	Washington .	555	1885
Cathedral	Cologne . .	511	A.D. 1230
Great Pyramid	Near Cairo .	479, now 450	B.C. 3000
Khafras Pyramid	,, ,, .	454, ,, 441	About 2850
Menkara's Pyramid	,, ,, .	219, ,, 203	,, 2700
Cathedral of St. Stephen's	Vienna . .	470 S. Tower	
,, ...	Strasburg . .	468 Spire	Completed 1439
,, Notre Dame	Antwerp . .	460 ,,	Begun 1352
,, ...	Gonieus . .	422 ,,	1220
Church of St. Martin	Landshut. .	420 ,,	1450
St. Peter's	Rome . .	Dome 405, Cross 448	1450
Cathedral	Cremona . .	396	1283
,, ...	Florence . .	380	1298
,, ...	Freiberg . .	367	1122—1513
,, St. Paul's	London . .	365	1675—1710
,, of St. Mark	Venice . .	353	1071
,, La Giralda Tower	Sevilla . .	350	1196—1568
,, ...	Milan . .	350	1387
,, ...	Salisbury . .	350	1220
Parliament House, Victoria Angle . . .	London . .	340	1830—1868
Cathedral of St. Martin	Utrecht . .	328	720—1382
,, of St. Patrick	New York .	328	1870—1880
,, ...	Munich . .	320	1368—1494
,, ...	Bologna . .	321	1390
,, ...	Lincoln . .	300	1250
Church, Trinity	New York .	284	
Cathedral	Mexico . .	280	1573—1667
,, ...	Montreal . .	280	1865—1880
Campanile Tower	Florence . .	276	1334
Cathedral	Canterbury .	250	1150
,, ...	Dantzic . .	250	1343—1503
Column	Delhi . .	260	
Porcelain Tower	Nankin .	260	1413
Cathedral	Lima .	245	1550
Westminster Abbey	London .	225	650—1260
Notre Dame Cathedral	Paris .	224	1250

Name.	Location.	Height, Feet.	Date.
Monument, Bunker's Hill	Boston	221	1825—1842
English Cathedral	Montreal	226	
Notre Dame Cathedral	„	224	
Cathedral	Rheims	220	Unfinished, 1211
Minster	York	220	1118
Cathedral	Ely	218	1174
SS. Peter and Paul Cathedral	Philadelphia	210	
Christ Church	„	196	1727
Leaning Tower	Pisa	179	1174
Washington Monument	Baltimore	210	
Trojan's Column	Rome	132	114
Arch of Triumph	Paris	162	1805—1845
Column of July	„	154	1832
Garisenda Campanile	Bologna	150	1180
Monument, Place Vendome	Paris	143	1805
Marcus Aurelius' Pillar	Rome	123	176
Colossus, Brass Statue	Rhodes	105	B.C. 280
Obelisk of Luxor	Paris	110	From Thebes
Lateran Obelisk, Thothmes	Rome	150	Brought from Egypt
Public Building	Philadelphia	537	1888
Church St. Nicholas	Hamburg	540	—

The capacity of the great Assembly rooms of the old and new world:—Coliseum, Rome, 87,000; St. Peter's, Rome, 58,000; Cathedral, Milan, 40,000; Theatre of Pompey, Rome, 40,000; T. of Marcellus, Rome, 20,000; St. Paul's, Rome, 38,000; St. Paul's, London, 31,000; St. Petronia, Bologna, 26,000; Cathedral, Antwerp, 25,000; Cathedral, Florence, 23,500; St. John's Lateran, Rome, 23,000; St. Sophia's, Constantinople, 23,000; Notre Dame de Paris, 13,000; Cathedral, Pisa, 13,000; St. Stephen's, Vienna, 12,400; St. Dominic's, Bologna, 12,000; St. Peter's, Bologna, 11,400; Cathedral, Vienna, 11,000; Mormon Temple, Salt Lake City, 10,000; St. Mark's, Venice, 7,500; Gilmore's Garden, New York, 8,443; Bolshoi Theatre, St. Petersburg, 5,000; Music Hall, Cincinnati, 4,824; La Scale, Milan, 4,000; University Hall, Ann Harbour, 3,500; San Carlos, Naples, 3,600; Columbia Theatre, Chicago, 2,972; Music Hall, Boston, 2,585; Academy, Paris, 2,092; Imperial, St. Petersburg, 2,160; Covent Garden, London, 2,684; Grand Opera House, New Orleans, 2,052; St. Charles's Theatre, New Orleans, 2,178; Grand Opera House, New York, 1,883; Booth's Theatre, New York, 1,807; Opera House, Detroit, 1,790; McVicker's Theatre, Chicago, 1,786; Auditorium, Chicago, 3,200.

CALENDAR.—1. Jewish, 383 days; the Jewish year 5647 began on September 20th, 1886.

2. Julius Cæsar's, 365 days, B.C. 46, commenced in March.

3. Mahometan, 355 days, A.D. 622; the Mahometan year 1303 began February 19th, 1884.

4. Charles IX., A.D. 1564, commenced January 1st.

5. Pope Gregory XIII., A.D. 1582; now universally used except in Russia.

6. The Russian year begins on January 13th of our calendar. The Gregorian calendar was adopted in England in 1752, before which date the year began on March 25th, which would now be April 5th.

CAMELS.—A camel has twice the carrying power of an ox; with an ordinary load of 400 pounds he can travel 12 or 14 days without water, going 40 miles a day. Camels are fit to work at 5 years old, but their strength begins to decline at 25, although they live usually till 40. They are often fattened at 30 for the butcher, the flesh tasting like beef. The Timbuctoo breed is remarkable for speed and used only for couriers, going 800 miles in eight days with a meal of dates or grain at night.

CANALS.—The average cost of making canals has been £9,600 in Great Britain, £10,000 in France, £10,000 in the United States, and £15,400 in Canada, per mile. The great canals of the world, with length of miles and date of construction, are given below:—

Name.	Where Located.	Date.	Miles.
Suez.	Egypt	1869	92
Schuylkill Coal and Nav. Co.	Pennsylvania	1825	108
Burgundy	France	1775	158
Amsterdam	Holland	1825	14
Bengal	India	1854	900
Chesapeake and Ohio	Maryland	—	191
Delaware and Hudson	N.Y. and Pa.	—	168
Illinois and Michigan	Illinois	—	102
Erie	New York	1825	363
Champlain	„ „		81
Welland	Canada	1830	41
Caledonian	Scotland	1822	60
Pennsylvania	Pennsylvania	1830	359
James River and Kanawha	Virginia	—	147
Ohio and Erie	Ohio	1830	307
Miami	„	1830	178
Morris and Essex	New Jersey	—	101
Wabash and Erie	Indiana	-	469
Imperial	China	1400	2000
Orleans	France	1775	
Languedoc	„	1668	160
Bridgewater	England	1777	38
Eider	Denmark	1785	26
Black River	New York	1861	50
Helder	Holland	1825	60
Manchester Ship Canal	England	1894	35½
Baltic Sea Canal	Germany	1895	53½

The Imperial Canal, China, is the longest in the world, and connects 41 cities situated on its banks. The next is the Vishnee, Russia, including a part of the River Volga.

The Suez Canal, opened in 1869, is 26 feet deep, and was 13 years in construction. The tolls average £869 per vessel. Steamers go through in 40 hours, of which 17 steaming. The saving to commerce by reason of this canal, after deducting payment of fees, is above £2,000,000 annually. The British Government owns one-fifth of the shares, having bought them from the Khedive in 1876. The canal shortens the voyage between England and the East by one-third. The value of what passes through the canal is equal to one-seventh of the total foreign commerce of Great Britain.

The estimated cost of the Panama Canal is £26,491,000. Its length will be 46 miles, including a tunnel of 4 miles, which will be 100 feet wide and 160 feet high. When completed it will save about 10,000 miles of voyage between Europe and the Pacific.

CAPACITY OF BOXES.—The following table will often be found convenient, taking *inside* dimensions :—

A box $8\frac{2}{5}$ in. by 8 in., and 8 in. deep, will contain a *peck.*

A box 8 in. square and $4\frac{1}{8}$ in. deep, will contain a *gallon.*

A box 7 in. square and $2\frac{3}{4}$ in. deep, will contain a *half gallon.*

A box 4 in. square and $4\frac{1}{5}$ in. deep, will contain a *quart.*

A box 3 in. square and $3\frac{1}{3}$ in. deep, will contain a *pint.*

A box 24 in. by 17 in. and 28 in. deep, will contain a *barrel.*

A box $13\frac{1}{2}$ in. square and $11\frac{1}{4}$ in. deep, will contain a *bushel.*

A box 12 in. by $11\frac{1}{2}$ in., and 9 in. deep, will contain a *half-bushel.*

A box 10 in. square and $10\frac{3}{4}$ in. deep, will contain a *half-bushel.*

CAPTURES.—During the war with Napoleon, the British navy captured or destroyed 156 ships of the line, 382 frigates, 662 corvettes, 1,306 brigs.

In the Franco-German war, Germany took from France 7,234 cannon and 446,000 prisoners; 384,000 were sent into Germany, including 11,860 officers.

CARBONIC ACID.—The quantity exhaled in 24 hours :—

Person.	Age.	Oz. Exhaled.	Person.	Age.	Oz. Exhaled.
Girl . .	10	9	Boy .	16	16
Boy . .	10	10	Man .	28	17
Woman .	19	12			

The quantity varies according to exertion. The number of ounces exhaled each hour is as follows: Sleeping, 0·6; Walking 2 miles, 2·1; Walking 3 miles, 3·0; Riding, 4·0: Swimming, 4·4; Treadmill, 5·5.

CAVALRY.—The number of troopers in each country is: Russia, 86,000; France, 69,000; Germany, 67,000; Austria, 51,000; Italy, 34,000; Great Britain, 18,000; Spain, 13,000; United States, 8,000; Sweden and Norway, 7,000; Belgium, 5,000; Holland, 4,000; Portugal, 3,000; Denmark, 2,000.

CHARCOAL.—To make a ton will be required of wood as follows: Oak, 4·4; chestnut, 4·5: beech, 5·1; elm, 5·2; pine, 6·0.

For heating power 12 lbs. charcoal are equal to 10 lbs. coal or 13 lbs. of coke. The iron works of the United States consume 600,000 tons of charcoal yearly; the yield of 50,000 acres, the average being 12 tons to an acre. In France charcoal is made largely from seaweed. In Ireland it is often made from peat.

CHEESE.—The component parts of cheese are :—

	Chester.	Parma.	Brie.	Dutch.	Gruyere.
Water .	30·4	30·3	34·0	41·4	32·1
Nitrogen	8·0	7·9	5·1	7·0	8·0
Fat . .	36·6	31·1	53·3	42·8	41·8
Various .	25·0	30·7	7·6	8·8	18·1
	100·0	100·0	100·0	100·0	100·0

CHILDBIRTH.—The average of deaths in childbirth for 20 years in England and Wales has been 32 per 10,000 births—$1\frac{1}{2}$ per cent. of all mothers; since the average mother has five children.

CINCHONA (or Quinine).—The annual production in thousand pounds is: Peru, 8,900; India, 2,200; Java, 110; Jamaica, 21.

CHIMNEY.—The highest in the world is that at Port Dundas, Glasgow, 454 feet.

CHOLERA.—In 1832 the death ratio averaged 38 to 40 per cent. of cases, but in subsequent visitations it was lower. The following table gives the deaths at each visitation (thousands omitted).

	1832	1848	1854	1866	1873	Total.
Great Britain .	53	55	22	18	—	148
France . .	103	134	146	44	63	490
Germany . .	60	124	119	33	52	391
Austria . .	99	145	218	220	436	1,118
Other Countries	250	300	400	245	—	1,265
	565	761	965	560	621	3,412

COD.—The average take is 122,000,000 fish valued at £2,110,000. The production of cod-liver oil averag 900,000 gallons yearly, chiefly in Canada and Norway 100 livers yielding one gallon of oil.

COFFEE.—The coffee fields of Brazil cover 2,000,000 acres, with 800,000,000 trees and employing 800,000 hands. The production of 1880 in thousand tons was: Brazil, 333; Java, 90; Ceylon, 53; West Indies, 42; Africa, 36; Manilla, 35; total, 589,000 tons, or 56 per cent. from Brazil.

The consumption of coffee, in thousand tons, for same period, was: United States, 165; Germany, 110; Brazil, 62; France, 55; Netherlands, 50; Austria, 40; British Colonies, 38; Russia, 20; Scandinavia, 20; Great Britain, 15; Italy, 14.

CONSUMPTION.—In England and Wales 14 per cent. of males and $13\frac{1}{2}$ per cent. of females die of consumption. In the United States the deaths from consumption are 92,210, or 13 per cent. of all recorded.

Cotton.—The world's production in 1880 was 4,039 million pounds, distributed in million lbs. as follows: United States, 3,161; India, 540; Egypt, 282; other countries, 56.

The consumption of cotton, same period, in million lbs. was: Great Britain, 1,404; United States, 961; Germany, 390; France, 340; other countries, 649; total, 3,744.

Cremation.—It requires 55 minutes time to burn a body weighing 140 lbs., from which 3 lbs. of ashes are produced.

Crises (Financial).—The most remarkable since the middle of the 18th century have been as follows:—

1763. Amsterdam, originating with the house of De Neufville, 77 heavy failures.

1773. Failure in Holland exceeding £10,000,000.

1799. Hamburg, 82 failures, £4,000,000; Panic at Liverpool, Parliament lent a half million pounds in Exchequer bills on goods.

1814. England, 240 banks suspended.

1825. Manchester, failures, 2 millions.

1831. Calcutta, failures, 15 millions.

1837. United States, "Wild-cat" crisis; all banks closed.

1839. Bank of England saved by Bank of France. Severe also in France, where 93 companies failed for 6 millions.

1844. England. State loans to merchants. Bank of England reformed.

1847. England, failures, 20 millions; discount 13 per cent.

1857. United States, 7,200 houses failed for 111 millions.

1866. London, Overend-Gurney crisis; failures exceeded 100 millions.

1869. Black Friday in New York (Wall Street), September 24th.

1883. Boston, shoe and leather trade, over 2 millions.

1884. New York, Grant and Ward failure, involving many financial and business houses and a loss of over 25 millions.

1890. London, Baring Brothers' difficulties.

Current.—In the Pacific Ocean a bottle was thrown overboard in 4 deg. S. and 119 deg. W., and after 455 days, was picked up June 1881, in the Feejee Islands, having been carried 6,700 miles, or 15 miles a day.

The velocity of the Gulf Stream varies with the seasons. On entering Florida Straits its rate is from 60 to 100 miles per day; on entering the "Narrows" 70 to 120 miles; beyond this the rate gradually decreases to 24 miles per day.

Deaf and Dumb.—Authorities state that the danger of children being born deaf and dumb is six times greater when the parents are cousins. The rate per million inhabitants is greatest in Switzerland and Denmark, and smallest in the United States; the census of 1880 shows the total number in the United States to be 33,878 or 675 per million inhabitants. The average ratio of sex in all countries is 55 per cent. males, 45 per cent. females.

Deaths.—The annual average death-rate per 1,000 inhabitants of countries is as follows:—Hungary, 40·1; Austria, 31·2; Italy, 29·7; Spain, 29·7; Germany, 27·1; France, 24·3: Holland, 24·3; Switzerland, 24·0; Belgium, 23·6; Scotland, 21·8; England, 21·3; Denmark, 19·3; Sweden, 18·4; Ireland, 18·3; United States, 15·0.

Of 100 deaths in merchant shipping 55 are from drowning, 35 from sickness, and 15 from other causes.

The average deaths from drink annually per 1,000 deaths are:—United States (New York), 12·08; Scotland, 3·29; Ireland, 2·79; France, 1·05; Belgium, 3·83; Italy, 9·85; Switzerland, 3·81; Sweden, 6·25; Norway, 2·36.

Prof. Conrad gives the proportion of deaths to classes as follows:—

	Affluent.	Middle.	Working.
Stillborn	28	53	53
0-1 year	118	240	206
1-5 "	95	192	220
5-15 "	48	49	58
10-20 "	35	24	21
20-30 "	86	63	64
30-60 "	247	204	222
Over 60 years	343	175	156
	1,000	1,000	1,000

Death-rate of cities per 1,000 inhabitants:—

Alexandria	34·2	Dublin	27·1	New York	26·2
Amsterdam	23·7	Edinburgh	20·2	Nottingham	22·4
Baltimore	21·1	Geneva	21·2	Oldham	22·8
Belfast	28·2	Glasgow	25·3	Palermo	28·5
Berlin	27·6	Hamburg	24·5	Paris	28·6
Birmingham	19·8	Havana	45·7	Philadelphia	20·3
Bombay	33·7	Hull	23·8	Portsmouth	19·7
Bordeaux	26·7	Leeds	21·6	Quebec	22·9
Boston	22·5	Leicester	21·8	Rio Janeiro	39·4
Bradford	21·1	Leipsic	26·1	Rome	26·8
Breslau	32·5	Liverpool	26·7	Rotterdam	23·3
Brighton	19·0	London	21·1	Rouen	31·3
Bristol	19·6	Lyons	24·7	St. Louis	19·3
Brooklyn	25·6	Madras	38·8	St. Petersburg	51·4
Brussels	23·9	Madrid	37·4	San Francisco	18·1
Bucharest	24·5	Manchester	25·5	Sheffield	21·6
Buda-Pesth	35·2	Marseilles	28·0	Stockholm	24·7
Buenos Ayres	30·1	Mexico	30·9	Sunderland	20·9
Calcutta	31·1	Milan	30·6	Turin	25·6
Chicago	27·2	Montreal	37·2	Valparaiso	64·6
Christiania	18·8	Munich	32·8	Venice	22·7
Copenhagen	22·1	Naples	33·1	Vera Cruz	70·5
Cork	26·1	Newcastle	21·8	Vienna	29·0
Dresden	25·4	New Orleans	22·7	Zurich	25·6

Depth of the Oceans and Great Lakes (in feet). Superior (greatest depth), 1,200; Constance, 1,027; Huron, 1,000; Michigan, 990; Maggiore, 700; Zurich, 600; Ontario, 600; Baikal, 580; Wetter, 410; Wenner, 294; Erie, 80; Neagh, 42; St. Clair, 20. The average depth of the sea in yards is: the Atlantic, 4,026; Pacific, 4,252; Indian, 3,658; Arctic, 1,690; Antarctic, 3,000; Mediterranean, 1,476; Irish, 240; English Channel, 110; German, 96; Levant, 72; Adriatic, 45; Baltic, 43; Bay of Biscay, 1,200. The Southern Ocean below Cape Horn reaches a depth of 5,500 yards, and off Cape of Good Hope, 5,700 yards.

Diamonds.—The weight in carats of the six largest are:—Kohinoor, 103; Star of Brazil, 125; Regent of France, 136; Austrian Kaiser, 139; Russian Czar, 193;

Rajah of Borneo, 356. Their value is not regulated by size, nor easy to estimate, but no one of them is worth less than £100,000.

The following is the scale of value for small stones:—1 carat, £8; 3 carats, £70; 6 carats, £200; 10 carats, £800.

Cape diamonds are of inferior value; one of the largest, 1872, weighed uncut, 288 carats, and sold for £11,000. The annual export of diamonds from the Cape is about 1,400 lbs., worth £4,000,000, and the fields employ 2,000 white and 20,000 coloured diggers.

DIET.—The relative value of food, Beef being par, is:—Oysters, 22; Milk, 24; Lobsters, 50; Cream, 56; Cod-fish, 68; Eggs, 72; Turbot, 84; Mutton, 87; Venison, 89; Veal, 92; Fowl, 94; Herring, 100; Beef, 100; Duck, 104; Salmon, 108; Pork, 134; Cheese, 155.

DIGESTION.—The time required for digesting various kinds of food is:—

	Hours.	Min.		Hours.	Min.
Rice . .	1	0	Mutton, boiled	3	0
Eggs, raw .	1	30	Beef, roast .	3	0
Apples . .	1	30	Bread, fresh .	3	15
Trout, boiled .	1	30	Carrots, boiled	3	15
Venison, broiled	1	35	Turnips, ,,	3	30
Sago, boiled .	1	45	Potatoes, ,,	3	30
Milk, ,, .	2	0	Butter . .	3	30
Bread, stale .	2	6	Cheese . .	3	30
Milk, raw . .	2	15	Oysters, stewed	3	30
Turkey, boiled	2	25	Eggs, hard .	3	30
Goose, roast .	2	30	Fowls, roast .	4	0
Lamb, broiled .	2	30	Beef, fried .	4	0
Potatoes, baked	2	30	Cabbage . .	4	30
Beans, boiled .	2	30	Wild Fowl .	4	30
Parsnips, ,, .	2	30	Pork, roast .	5	15
Oysters, raw .	2	55	Veal, ,, .	5	15
Eggs, boiled .	3	0			

DIVORCES.—The number of divorced and separated per 1,000 marriages average:—Switzerland, 51; United States, 45; Denmark, 30; Germany, 17; Austria, 10; Roumania, 10; France, 9; Netherlands, 8; Sweden, 7; Great Britain, 3; Italy, 3.

The greatest number of divorced persons occur in Protestant or mixed countries. In Austria, the mixed provinces, had 12 times more divorces to population, and the Protestant 28 times more than in Catholic provinces.

DOGS.—The brain of dogs in drams is:—Sheep dog, 29·5; Foxhound, 29·2; Setter, 26·1; Mastiff, 26·1; Retriever, 25·7; Collie, 25·4; Bull-dog, 24·0; Newfoundland, 24·0; Greyhound, 23·4; Terrier, 20·0; Spaniel, 18·1; Lap-dog, 18·0. As compared with the above the wolf has 42, the jackal, 15; the fox, 13 drams.

It is found that 100 male dogs go mad compared with 14 female.

DRUNKENNESS.—It is estimated that the number of years of intemperance to produce death is:—

Class.	Years.	Liquor.	
Women	14	Beer	22
Gentlemen	15	Spirits	17
Working	18	Mixed	16

This shows that the working class can stand drink longest, and that beer is the least deadly form of intemperance. The number of cases of insanity traceable to drink is shown under the subject *Insanity*.

The value of life drunk or sober is:—

	Expectancy of Years	
Age.	Drunk.	Sober.
20	15	44
30	14	36
40	11	29

Thus it is seen that a drunkard will not live out one-half his days.

DWARFS.—The more remarkable dwarfs are named below:—

	Height, inches.	Date of Birth.	Place of Birth.
Borowlaski .	39	1739	Warsaw.
Tom Thumb .	31	1837	New York.
Mrs. Tom Thumb	32	1842	,, ,,
Che-Mah . .	25	1838	China.
Lucia Zarate .	20	1863	Mexico.
General Mite .	21	1864	New York.

DYING.—The chances of dying at various ages:—

Age.	Per cent.	Age.	Per cent.	Age.	Per cent.	Age.	Per cent.
27	0·8	40	1·0	50	1·6	65	4·4
33	0·9	45	1·2	60	3·0	70	6·5

A man will die for want of air in five minutes; for want of sleep in ten days; for want of water in a week; no reliable statistics have been given as to length of life for food, this being dependent upon varying circumstances.

EARTHQUAKES.—Since the beginning of the 18th century, the most destructive have been:—

Year.	Place.	Lives Lost.	Year.	Place.	Lives Lost.
1703	Yeddo .	190,000	1797	Quito .	40,000
1706	Abruzzi .	15,000	1812	Caracas .	12,000
1716	Algiers .	20,000	1822	Aleppo .	22,000
1726	Palermo .	6,000	1851	Melfi .	14,000
1731	Pekin .	100,000	1857	Calabria .	10,000
1746	Lima .	18,000	1859	Quito .	5,000
1754	Cairo .	40,000	1859	Erzeroum	15,000
1755	Kaschan .	40,000	1860	Mendoza .	12,000
1755	Lisbon .	50,000	1868	Arequipa .	25,000
1759	Syria .	20,000	1875	Cucuta .	14,000
1773	Guatemala	35,000	1880	Manilla .	3,000
1780	Mauris .	75,000	1883	Java .	50,000
1783	Messina .	60,000			

In the course of 75 years from 1783 to 1857, the kingdom of Naples lost, at least, 111,000 inhabitants by the effects of earthquakes.

ECLIPSES.—The first ever recorded (lunar) accurately observed at Babylon, B.C. March 19th, 721. The Nineveh eclipse (sun) recorded on a Nineveh tablet, B.C. June 15th, 763.

ELECTORS.—The proportionate representation in Great Britain is:—England, 75·0; Scotland, 9·2; Ireland, 15·8; total, 100. The population: England, 74·6; Scotland, 10·7; Ireland, 14·7; total, 100. The revenue: England, 76·1; Scotland, 12·4; Ireland, 10·5; total, 100.

Electric Light.—The greatest lights are:—

	Candle power.
The Electric Moon Surface, California .	24,000
Torch, Statue of Liberty, N.Y. Harbour .	60,000
Chandelier, Palais d'Industrie, Paris .	150,000
Marseilles Lighthouse, France . . .	40,000
Sydney Lighthouse, Australia . . .	180,000

An engine of 40-horse power will feed 400 lamps on a line of 30 miles, consuming 150 lbs. of coal per hour, as compared with one ton per hour for gaslight over the same length.

Elevation of Continents.—The average above sea level in feet is:—Europe, 670; Asia, 1,140; North America, 1,150; South America, 1,100.

Emerald.—The relative value of emeralds is:—5 grains, £5; 10 grains, £20; 15 grains, £50; 24 grains, £100.

Exhibitions.

Date.	Place.	Area (Acres).	Visitors (Millions).	Days Open.	Receipts.
1851	London .	21	6·2	141	£424,000
1855	Paris . .	24	4·5	200	128,000
1862	London .	23	6·2	171	408,000
1867	Paris . .	37	9·3	217	422,000
1873	Vienna .	48	7·3	186	406,000
1876	Philadelphia	45	10·2	—	—
1878	Paris . .	60	16·1	194	974,000
1885	New Orleans	200	—	—	—

The main building of the New Orleans Exposition was the largest ever erected, being 1,378 feet long by 905 wide.

Factories.—Steam Power of Nations—Horse Power: Great Britain, 2,200,000; United States, 1,987,000; Germany, 1,321,000; France, 916,000; Belgium, 382,000; Russia, 287,000; Austria, 157,000; other countries, 253,000; total, 7,443,000.

Families.—The most remarkable large families are:—

Date.	Parent.	Place.	No. children.
1570	Frescobaldi . .	Florence .	52
1782	Vassileff . . .	Moscow .	83
1850	David Wilson . .	Indiana .	47
—	Mr. Greenhill . .	Herts . .	39
1760	Rev. Erskine . .	Scotland .	33
1883	L. Saez . . .	United States	37

Sir William Phipps, governor of Massachusetts, was one of 26 children, 21 of whom were boys. He was born in Woolwich, Feb. 2nd, 1651, and died in London, Feb. 18th, 1695.

Famines. Walford mentions 160 since the 11th century, viz.: England, 57; Ireland, 34; Scotland, 32; France, 10; Germany, 11; Italy, etc., 36.

The worst in modern times has been:—France, 1770, 48,000 victims; Ireland, 1847, 1,029,000; India, 1866, 1,450,000 deaths.

Farms. There are 536 million acres of improved farm land in the United States, an increase of 125 million acres since 1 70. The number of farms in 1880 was 4,008,907, an increase over 1870 of 1,348,922 farms.

Fields and Lots (Contents of).—The following table will assist farmers in making an accurate estimate of the amount of land in different fields under cultivation:—

10 rods	×	16 rods	=	1 acre.
8 „	×	20 „	=	1 „
5 „	×	32 „	=	1 „
4 „	×	40 „	=	1 „
5 yards	×	968 yards	=	1 „
10 „	×	484 „	=	1 „
20 „	×	242 „	=	1 „
40 „	×	121 „	=	1 „
80 „	×	60½ „	=	1 „
70 „	×	69½ „	=	1 „
220 feet	×	198 feet	=	1 „
440 „	×	99 „	=	1 „
110 „	×	396 „	=	1 „
60 „	×	726 „	=	1 „
120 „	×	363 „	=	1 „
240 „	×	18½ „	=	1 „
200 „	×	$108\frac{9}{10}$ „	=	½ „
100 „	×	$145\frac{2}{10}$ „	=	⅓ „
100 „	×	$108\frac{9}{10}$ „	=	¼ „
25 „	×	100 „	=	·0574 „
25 „	×	110 „	=	·0631 „
25 „	×	120 „	=	·0688 „
25 „	×	125 „	=	·0717 „
25 „	×	150 „	=	·109 „
2178 square feet			=	·05 „
4356 „ „			=	·10 „
6534 „ „			=	·15 „
8712 „ „			=	·20 „
10890 „ „			=	·25 „
13068 „ „			=	·30 „
15246 „ „			=	·35 „
17424 „ „			=	·40 „
19603 „ „			=	·45 „
21780 „ „			=	·50 „
32670 „ „			=	·75 „
34848 „ „			=	·80 „

Fats.—The Composition and the Temperature at which fats melt is shown by the subjoined table.

Fat is composed of two substances: Oleine, or Elain, which is that portion of all fats which always retains its fluid state, and may be obtained from them by pressure; and Stearine, which is the solid portion that remains after the Oleine is removed. The composition of 100 parts of different varieties of fats, and the temperature at which they melt are—

	Oleine.	Stearine.	Fusible Temperature.
Fresh Butter in summer .	60	40	
„ „ winter .	37	63	
Hog's lard . . .	62	38	97° Fahr.
Ox marrow . . .	24	76	
Ox tallow . . .	24	76	
Mutton suet . . .	23	77	97° to 104° Fhr.
Goose fat . . .	68	32	111° Fahr.
Duck „	72	28	126½° Fahr.
Turkey fat . . .	74	26	113° Fahr.
Fat of meat . . .	—	—	127° „

Professor Johnston says that the solid fat of the goose is the same as that of man, and as that in olive oil and butter, and is named *margarine*; and that the solid fat of cattle, the sheep, the horse, the pig, differs from that of man, and is known by the name of *stearine*. The fluid part, or oleine, is identical in all animals and is exactly the same thing as the fluid part of olive oil, and many other vegetable oils, and in greater quantities in the fat of some animals than in that of others.

Food.—Food supply of all nations is shown by the following table:—

Fever.—The predisposition varies with age in the following degree:—

Age.	Degree.	Age.	Degree.	Age.	Degree.
Under 5	10	20-25	197	50-55	6
5-10	94	25-30	102	Over 55	2
10-15	182	30-40	44		
15-20	269	40-50	16		

Napoleon lost 51,000 soldiers by fever in his campaign of 1812, and the French army 17,000 men in the Crimea, in 1855.

Flour.—The nutritive value of flour is as follows:—Ordinary English, 100; German, 115; Canada, 127; Essex (England), 120; Scotch, 134; United States, 145.

Countries.	Grain—Million Bushels.				Meat—Thousand Tons.				Production of.		
	Production.	Consumption.	Surplus.	Deficit.	Production.	Consumption.	Surplus.	Deficit.	Wine, Million Gals.	Beer, Million Gals.	Spirits, Million Gals.
United States	2,390	2,020	370	—	3,816	2,740	1,076	—	20	360	76
Great Britain	410	690	—	280	1,205	1,808	—	603	0	1,110	31
France	740	910	—	170	1,002	1,228	—	226	660	192	33
Germany	950	1,065	—	115	1,340	1,700	—	360	90	880	61
Russia	1,620	1,440	180	—	2,116	1,925	191	—	20	50	105
Austria	560	530	30	—	960	975	—	15	290	245	24
Italy	270	275	—	5	224	215	9	—	660	20	8
Spain	305	300	5	—	196	188	8	—	260	0	4
Belgium	95	120	—	25	92	140	—	48	0	170	15
Holland	50	65	—	15	144	87	57	—	0	35	16
Denmark	74	62	12	—	112	52	60	—	0	25	8
Sweden and Norway	78	80	—	2	213	146	67	—	0	35	27
Portugal	30	35	—	5	54	47	7	—	88	0	1
Turkey and Greece	90	80	10	—	250	250	—	—	24	0	1
Australia	58	41	17	—	990	152	838	—	2	0	4
Canada	170	160	10	—	287	270	17	—	0	0	1
River Plate	6	6	—	—	1,310	272	1,038	—	1	1	1
Algeria	30	15	5	—	110	82	110	—	9	0	0
The World	7,916	7,894	22	—	14,421	12,227	2,144	—	2,124	3,123	416

Forests.—The forests of the world are distributed as follows (in million acres):- Russia, 485 millions; United States, 176; Canada, 174; Brazil, 135; Scandinavia, 63; Austria, 46; Gran Chaco, 37; Germany, 33; France, 23; Italy, 11; Spain and Portugal, 8; Algeria, 6; United Kingdom, 2; Netherlands, 1½; total, 1,201½. Since 1848 the French have converted 9 million acres of waste land into forest, producing about 8*s.* an acre. Paris burns the timber of 50,000 acres yearly, requiring an area of 1 million acres of forest to keep up the supply. Wood-cutters in the United States fell 10,000 acres daily, or 3,000,000 acres per annum.

There are, moreover, 200 million bushels of wheat grown in India, of which one-tenth is exported; and besides the wine crop here given the Cape Colony produces 4½ million gallons, and Madeira, Canaries, etc., 5 millions.

The yearly consumption of necessaries per inhabitant in pounds is—

	Grain.	Meat.	Butter.	Sugar.
United States	392	120	16	23
United Kingdom	330	105	13	68
France	505	74	4	21
Germany	585	69	8	21
Russia	490	48	3	7
Austria	410	64	5	14
Italy	420	23	1	7
Spain	390	49	0	5
Belgium and Holland	445	69	6	16
Denmark	475	70	15	31
Sweden and Norway	330	65	9	17
Average	445	70	7	20

The consumption of luxuries are as follows per inhabitant:—

	Ounces.			Gallons.		
	Coffee.	Tea.	Tobacco.	Wine.	Beer.	Spirits
United States	115	20	59	0·60	7·20	1·50
United Kingdom	15	72	23	0·44	28·60	1·05
France	52	1	29	20·12	5·10	0·90
Germany	83	1	72	2·70	19·40	1·33
Russia	3	7	26	0·38	0·80	2·20
Austria	35	1	80	7·50	6·50	0·80
Italy	18	1	22	17·60	0·70	0·30
Spain	4	1	32	13·50	0·10	0·20
Belgium and Holland	175	8	84	0·80	22·20	2·60
Denmark	76	8	61	0·30	12·60	4·30
Sweden and Norway	88	2	29	0·20	5·40	4·20
Average	44	11	41	5·50	8·60	1·10

There are many valuable items of food besides those above given. Grain is largely supplemented by potatoes in Ireland and Germany, and by chestnuts in Italy:

moreover, this column does not include rice, the consumption of which is rapidly increasing. Meat includes fowl, but neither game nor fish, nor lard, all of which enter largely into European food. Cheese is another important item not included above. The same may be said of fruit and vegetables.

Fruit.—The degree of sugar in various fruits are: Peach, 1·6; raspberry, 4·0; strawberry, 5·7; currant, 6·10; gooseberry, 7·2; apple, 7·9; mulberry, 9·2; pear, 9·4; cherry, 10·8; grape, 14·9.

The following list approximates the number of varieties of the chief fruits known to modern pomologists:—

Almonds, 9; apples, 1,570; barberry, 1; blackberries, 30; butternut, 1; cherries, 209; chestnuts, 4; citrons, 4; cranberries, 3; currants, 29; figs, 16; filberts, 8; gooseberries, 81; grapes, 232; hickory-nuts, 2; lemons, 2; lime, 1; mulberries, 7; musk-melons, 17; nectarines, 32; olives, 6; oranges, 10; peaches, 239; pears, 1,087; plums, 297; pomegranates, 8; quinces, 10; raspberries, 88; strawberries, 257; walnuts, 5; water-melons, 15.

Fuel.—The greatest annual consumption of wood per inhabitant is in Russia, being 33 cubic feet; Canada, 31; United States, 21. Great Britain consumes 74 cwt. per inhabitant of coal against 28 for United States.

One pound of water evaporated by 1 lb. of fuel as follows: Straw, 1·9; wood, 3·1; peat, 3·8; coke or charcoal, 6·4; coal, 7·9; potatoes, 14·6.

Furnaces (Iron).—In 1881 there were 2,503 furnaces; distributed as follows: Great Britain, 555; United States, 490; France, 270; Sweden, 224; Germany, 220; Russia, 206; Austria, 98; Belgium, 40.

Furs.—The principal fair is at Leipzig; the sales in 1890 were in *thousands* of skins: Bear, 6; sable, 54; otter, 66; beaver, 80; black cat, 125; ermine, 160; fox, 180; skunk, 950; squirrel, etc., 4,855. In Russia and Siberia the annual slaughter of fur-bearing animals is: Marten, 50,000; ermines, 3 million; marmots, 15 million; squirrels, 25 million.

Geology.—Prof. Phillips gives the following as thickness of the earth's strata in feet: Tertiary, 2,000, cretaceous, 1,100; oolitic, 2,500; saliferous, 2,000; carboniferous, 20,000.

Gloves.—France makes nearly 26 million pairs, and exports 18 million pairs yearly.

Goats.—An ordinary goat gives a quart of milk daily, and lives 10 years. The most valuable breed is the Turkish or Angora, which produces a fine hair worth two shillings a pound.

Gold.—Gold can be beaten 1,200 times thinner than printing paper; one ounce will cover 146 square feet.

Gold is found associated with silver and other metals in all parts of the world in always varying proportions.

Gold, coined and uncoined, has varied greatly in value within historic times. A pound of gold in London brought—

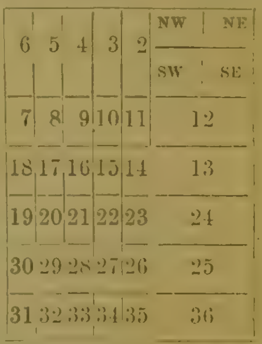
A.D.	1344	£15	0	0
„	1345	13	3	4
„	1347	14	0	0
„	1412	16	13	4
„	1464	20	16	8
A.D.	1526	£27	0	0
„	1549	34	0	0
„	1605	40	10	0
„	1626	44	10	0
„	1718	46	14	6

That is the value of a pound of gold, Troy weight, to-day.

The relative values of gold and silver have changed at different times, and we have collated a few of the more noteworthy variations in the subjoined table:—

	Part gold equalled	of silver.
Herodotus recorded that	1	13
Alexander the Great's time	1	10
Rome after Punic War	1	17·57
Rome under Julius Cæsar	1	18·93
Century after Columbus	1	10 to 12
Following two centuries	1	14 to 16
England under William, 1689	1	15
Berlin in 1838	1	15·69
United States laws, 1792 and 1834	1	15 and 15·87
France under and since Empire	1	15·50

Government Land Measure (United States).—A township consists of 36 sections, each 1 mile square; a section contains 640 acres; a quarter section, ½ mile square—160 acres; an eighth section, ½ a mile long north and south, and ¼ mile wide—80 acres; and a sixteenth section, ¼ mile square, which is the smallest sized tract, except fractions, sold by the government. In the surveys of Public Lands of the United States they are laid out in ranges of townships which run longitudinally, and are numbered on the maps in Roman characters, or capital letters, according to their proximity to the northern border of a State. The ranges of townships run from west to east; the extreme northern line of townships in any State would be all number 1, the next number 11, and so on down. In a township the sections are all numbered 1 to 36, beginning at the north-east corner, as shown in the diagram.



Grain.—The crops of the world in million bushels are:—Wheat, 2,076; corn, 1,960; oats, 1,794; rye, 1,408; barley, 819; other crops, 340; total, 8,397.

No crop suffers less from drought or gives better returns in suitable climate than corn. Its average yield per acre is 23 bushels. In the United States corn is mostly used in fattening pigs. The United States produces 90 per cent. of the entire corn crop of the world.

Gunpowder.—The following table gives the proportionate parts used in manufacture in the various countries:—

	Saltpetre.	Charcoal.	Sulphur.	Total.
American	75	13	12	100
English	75	15	10	100
French	75	13	12	100
German	75	11	14	100
Russian	74	14	12	100
Austrian	72	17	11	100
Spanish	76	11	13	100
Swedish	75	16	9	100
Chinese	76	14	10	100
Sporting	77	13	10	100

Gravity, Specific, compared with water. A gallon of wine or water weighs 10 pounds.

LIQUIDS.		TIMBER.		METALS.	
Water	100	Cork	24	Zinc	719
Sea water	103	Poplar	38	Cast iron	721
Dead Sea	124	Fir	55	Tin	729
Alcohol	84	Cedar	61	Bar iron	779
Olive oil	92	Pear	66	Steel	783
Turpentine	99	Walnut	67	Copper	869
Wine	100	Cherry	72	Brass	840
Urine	101	Maple	75	Silver	1,051
Cider	102	Apple	79	Lead	1,135
Beer	102	Ash	84	Mercury	1,357
Woman's milk	102	Beech	85	Gold	1,926
Cow's ,,	103	Mahogany	106	Platina	1,950
Goat's ,,	104	Oak	117		
Porter	104	Ebony	133		

PRECIOUS STONES.

Emerald	277·5	Diamond	353·0	Garnet	406·2
Crystal	265·3	Topaz	401·1	Ruby	428·3

SUNDRIES.

Indigo	77	Peat	133	Porcelain	226
Gunpowder	93	Opium	134	Stone	252
Butter	94	Honey	145	Marble	270
Ice	92	Ivory	183	Granite	278
Clay	120	Brick	200	Chalk	279
Coal	130	Sulphur	203	Glass	289

WEIGHT IN CUBIC FEET.

	Lbs. per Cub. Ft.		Lbs. per Cub. Ft.		Lbs. per Cub. Ft.
Cork	15	Oak	70	Iron	470
Cedar	36	Clay	72	Copper	520
Beech	51	Coal	80	Silver	630
Butter	56	Brick	120	Lead	680
Water	62	Stone	150	Gold	1,155
Mahogany	66	Granite	166		
Ice	70	Glass	172		

Guano.—The Peruvian Government exported from the Chincha Islands between 1850 and 1880 over 12 million tons, worth £110,000,000.

Gulf Stream.—Is equal to a river 50 miles wide, 1,000 feet deep, current varying from 2 to 6 miles per hour with a temperature of 65° Fahrenheit, cooling down to 40° as it approaches the north.

Gypsies.—There are 712,000 in Europe, distributed as follows: England, 18,000; Russia, 15,000; Scandinavia, 7,000; Spain, 40,000; Austria, 197,000; Roumania, 193,000; Turkey, 200,000; Germany, etc., 42,000.

Harvest Dates of the World:—

January.—Harvest is ended in most districts of Australia, and shipments have been made of the new crop, Chili, New Zealand, Argentine Republic.

February.—Upper Egypt, India.

March.—Egypt, India.

April.—Coast of Egypt, Syria, Cyprus, India, Persia, Asia Minor, Mexico, Cuba.

May.—Persia, Asia Minor, Algeria, Syria, Texas, Florida, Morocco, Mid-China, Japan, Central Asia.

June.—California, Oregon, Southern United States, Spain, Portugal, Italy, Hungary, Turkey, Roumelia, Danube, South Russia, South of France, Danubian Principalities, Greece, Sicily, Louisiana, Mississippi, Alabama, Georgia, Carolina (North and South), Tennessee, Virginia, Kentucky, Kansas, Arkansas, Utah, Colorado, Missouri.

July.—Southern, Eastern, and Midland English countries, Oregon, Nebraska, Minnesota, Wisconsin, Iowa, Illinois, Indiana, Michigan, Ohio, New England, New York, Virginia, Ontario, France, Germany, Austria, Hungary, Switzerland, Italy, Russia, Poland.

August.—Great Britain, France, Germany, Belgium, Holland, Manitoba, Columbia (British), Lower Canada, Hudson's Bay Territory, Denmark, Poland.

September.—Scotland, England (hops and roots), America (corn), Athabasca (wheat, barley, etc.), Sweden, North Russia, France (beetroot, buckwheat).

October.—Scotland, America (corn crop), France, Germany (vintage.)

November.—Australia (north), Peru, South Africa.

December.—Australia (south), Chili, Argentine Republic.

Hay.—The world's production in million tons is:—United States, 36; Germany, 26; Russia, 20; Austria, 15; France, 14; Scandinavia, 7; Great Britain, 4; Italy, 3; Belgium and Holland, 3; Spain and Portugal, 2; total, 130 millions, valued at £244,000,000.

MEASURING HAY.

To find the number of tons of meadow hay raked into windrows:—

Rule.—Multiply the length of the windrows in yards by the width in yards, and that product by the height in yards, and divide by 25; the quotient will be the number of tons in the windrow.

To find the number of tons of hay in a mow:—

Rule.—Multiply the length in yards by the height in yards, and that by the width in yards, and divide the product by 15; the quotient will be the number of tons.

Heat.—Scale in degrees Fahrenheit:—

Degree.		Degree.	
32	Ice melts.	594	Lead melts.
50	Temperature of globe.	1,140	Heat of common fire.
98	Blood heat.	2,223	Brass melts.
174	Alcohol boils.	3,479	Iron melts.
212	Water boils.		

Taking water at 1,000, the specific heat is:—Lead, 29; mercury, 33; silver, 56; zinc, 93; copper, 95; iron, 110; glass, 117; sulphur, 188.

Hemp.—The production in thousand tons is:—Austria, 110; Italy, 90; Russia, 60; France, 50; Holland, 50; Manilla, etc., 15. Great Britain consumes 78,800 tons.

Hens.—The average number of eggs laid yearly is 120 per hen. Hens' eggs usually form 80 per cent. of all eggs in ordinary use. Hens consume about 50 per cent. of the value they produce yearly.

Herring Fishery.—The annual average catch is 390 million tons, valued at nearly £5,000,000. About 10,000 herrings go to a ton, a British barrel containing 1,000; a Norwegian, 500 fish. The number of men engaged in herring fishing is nearly 200,000, who catch on an average over 20,000 fish each.

Hogs.—Table showing the number of hogs in the world, number killed yearly, amount of meat produced, average number of pounds per carcass, and pounds per inhabitant:—

Countries.	Thousands omitted.			Average lbs. per Carcass.	Lbs. of meat per Inhab.
	No. of Hogs.	Killed Yearly.	Meat, Tons.		
United States . .	47,680	32,000	1,420	100	60
Great Britain . .	3,190	2,100	145	155	9
France . . .	5,810	3,900	240	138	15
Germany . .	7,130	4,800	285	133	15
Russia . . .	10,514	7,000	445	140	12
Austria . . .	7,080	4,700	275	129	16
Italy . . .	1,570	1,000	55	124	4
Spain and Portugal .	5,323	3,600	130	81	14
Belgium and Holland	1,006	650	36	125	9
Norway and Sweden	1,040	700	34	109	9
Switzerland . .	335	200	10	112	8
Roumania, etc. .	2,310	1,500	60	88	19
Canada . . .	1,425	900	45	112	23
Australia . .	815	500	20	90	15
River Plate, S.A. .	362	200	8	90	6
Cape Colony, Africa .	164	100	4	90	8
Total . .	95,754	63,850	3,212	115	19

Homestead.—Free grants or Homesteads are given to actual settlers in the United States, Canada, Australia (except Chinamen), Algeria (French extraction only). The United States Government has given away over 200 million acres since 1870 to fully 500,000 families.

Hops.—The average annual crop in tons is:—England, 26,000; Germany, 19,000; United States, 15,000; France, 4,500. England consumes 33,000 tons yearly.

Horses.—There are in the world 52 million horses, representing a value of £579,000,000. A horse lives 25 years, and weighs 1,000 pounds; an omnibus or tramcar horse lasts from 4 to 6 years. Over 2 million pounds of horseflesh are consumed in Paris yearly, at a cost of 2½*d.* per pound; the average yield of meat is 450 pounds per horse.

The Average Power of Horses:—

Average weight, 1,000 pounds each.

Can carry his rider and equipments, say 225 pounds, 25 miles in a day of 8 hours, on a long journey.

The ordinary work of a horse may be stated at 22,000 pounds, raised 1 foot in a minute, for 8 hours a day.

In a horse mill a horse moves at the rate of 3 feet in a second. The diameter of the track should not be less than 25 feet.

The strength of a horse is equal to that of 5 men.

The strength of an ass is equal to that of 2 men.

In ploughing 2 horses exert a force of 150 pounds.

One horse can draw with a force of 200 pounds for 8 hours at a speed of 2½ miles per hour, or 240 pounds for 6 hours at the same speed.

One horse can draw more up a steep hill than 3 men can carry, that is from 450 pounds to 760 pounds.

Horse Power.—One horse-power will raise 10 tons per minute a height of 12 inches, working 8 hours a day. This is about 5,000 foot tons daily, or 12 times a man's work.

Four mail coach horses will draw a coach weighing 4 tons at the rate of 10 miles an hour for six days every week and last 5 years. A common cart horse will easily draw a ton 30 miles in a day of 12 hours.

The horse-power of Niagara is 3¼ million nominal, equal to 10 million horses effective, and valued at £15,000,000 per annum if conveyed by electricity to New York.

Houses.—The number of dwellings in the several countries is (thousands omitted):—Russia, 9,150; United States, 8,956; France, 8,813; Great Britain, 6,452; Austria, 6,280; Germany, 5,880; Italy, 4,420; Spain and Portugal, 3,810; Scandinavia, 1,200; Belgium, 1,060; Holland, 720.

The average persons per dwelling is:—Russia, 9·1; United States, 5·6; France, 4·3; Great Britain, 5·4; Austria, 5·9; Germany, 7·7; Italy, 6·3; Spain and Portugal, 5·4; Scandinavia, 6·9; Belgium, 5·1; Holland, 5·5.

Human Strength.—For a short period the results of experiments upon human strength are:—

With a draw knife, . .	force	100	pounds.
„ an auger, both hands	„	100	„
„ a bench, vice handle .	„	72	„
„ a chisel, vertical pressure	„	72	„
„ a screw-driver, one hand	„	84	„
„ a windlass . .	„	60	„
„ pincers compression .	„	60	„
„ a hand-plane . .	„	50	„
„ a hand-saw . .	„	36	„
„ a thumb-vice . .	„	45	„
„ a brace-bit, revolving	„	16	„

Ice is 8 per cent. lighter than water. Clear ice when 2 inches thick will bear men to walk on; 4 inches thick will bear horses and riders; 6 inches thick will bear horses and teams with moderate loads.

Illegitimacy.—The percentage for various countries is as follows:—Austria, 12·9; Denmark, 11·2; Sweden, 10·2; Scotland, 8·9; Norway, 8·05; Germany, 8·04; France, 7·02; Belgium, 7·0; United States, 7·0; Italy, 6·8; Spain and Portugal, 5·05; Canada, 5·0; Switzerland, 4·6; Holland, 3·5; Russia, 3·1; Ireland, 2·3; Greece, 1·6.

Insanity.—The insane of all countries is:—Germany, 108,100; France, 93,900; United States (1880), 91,997; England, 81,600; Russia, 80,000; Italy, 44,100; Austria, 35,000; Ireland, 19,500; Scandinavia, 18,100; Spain and Portugal, 13,000; Scotland, 11,600; Belgium and Holland, 10,400; Canada, 7,300; Australia, 4,900; Switzerland, 3,100. Of the insane in the United States, 41,177 were in asylums; 9,302 in almshouses; 417 in gaols; 41,101 at home. Of the insane, 44,408 were males, 47,589 females.

The Causes of Insanity.—Hereditary, 24 per cent.; drink, 18 per cent.; business, 12 per cent.; loss of friends, 11 per cent.; sickness, 10 per cent.; various, 29 per cent.

The above result is the medium average arrived at on comparing the returns for England, France, Denmark, and the United States.

Ratio of Sex.—Inmates of Asylums:—United States, 50½ male, 49½ female; England, 47 male, 53 female; France, 49 male, 52 female; Italy, 56 male, 44 female. Men are more liable to insanity than women, but die faster.

Inventions.—The most important inventions, with name of inventor and date of invention are given below:—

Name of Invention.	Name of Inventor.	Date.
Air Gun	Marin	1595
Air Pump	Otto von Guericke	654
Anastatic Printing	Baldermus	1841
Anchor	Anarchsis	594 B.C.
Anemometer	Wolfius	1709
Balloon	Montgolfier	1783
Barometer	Evangelista Torricelli	1643
Bellows	Anacharsis the Scythian	593 B.C.
Camel machine	Meuvis Meindertzoon Bakker	1688
Camera Lucida	Dr. Hooke	1535—1703
Camera Obscura	Roger Bacon	1297
Cannon	Chinese (Brass Cannon to John Owen	About 618 B.C.
Chronoscope	Wheatstone	1840
Clock	First one erected in Padua	11th Century.
Compass	Chinese	1115 B.C.
Cotton Gin	Eli Whitney	1793
Dial	Anaximander	550 B.C.
Diving Bell	Unknown	1509
Electric Clock	Wheatstone	1840
Electric Light	Sir Humphrey Davy	1813
Electrotype	Spencer and Jacobi	1837
Engraving	Chinese	1000 B.C.
Fire Arms	Unknown	1364
Fire Engine	Hautsch	1657
Gas	Van Helmont	1600—1625
Gas Meter	Clegg	1815
Geographical Maps	Anaximander	550
Glass	Phœnicians	—
Gunpowder	Barthold Schwarz	1320
Hydraulic Press	Joseph Bramah	1796
Hydraulic Ram	Montgolfier	1797
Kaleidoscope	David Brewster	1814
Lightning Conductor	Benjamin Franklin	1752
Lithography	Alois Senefelder	1798
Locomotive	Watt	1759
Matches	Walker	1827
Microscope	Zacharias Jansen	1590
Organ	Archimedes and Ctesibus	220—100 B.C.
Phonograph	Thomas A. Edison	1877
Photography	Thomas Wedgwood	1802
Pianoforte	Bartolommeo Christofali	1714
Pneumatic Railway	Henry Pinkus	1835
Stocking Frame	William Lee	1589
Printing	Johann Gutenberg	1438
Railroad	Beaumont	1672
Ruling Machine	By a Hollander; subsequently improved by Payne, Woodmason and Brown	1782
Sewing Machine	Elias Howe	1841
Steamboat	Robert Fulton	1807
Steam Engine	James Watt	1763
Telegraph	Samuel F. B. Morse	1837
Torpedo	David Bushnell	1777
Telephone	Elisha Grey, A. Graham Bell, A. C. Dolbear, and Thomas A. Edison	1877
Telescope	Hans Lipperheim, Jacob Adriansz	1608
Thermometer	Drebbel, Sanctorius	1609
Watch	. . . . .	

Said to have been first invented at Nuremburg, 1477, although it is affirmed that Robert, King of Scotland, had a watch about 1310. Spring watches have been ascribed to Dr. Hooke, and by some to Huyghens, about 1680; the horizontal watch by Graham 1724; repeating watches, by Barlow in 1676.

Interest Rates.—For any amount at 5, 6, and 7 per cent., for any number of days.

Rule.—To find the interest on any sum, multiply that sum by the number of days, and find the value of the product from the following table.

Example.—Required the interest on £200 for 10 days, at 5, 6, and 7 per cent. respectively. 200 × 10 = 2000. The product 2000 on the table is found to value 5*s.* 5¾*d.*, 6*s.* 7*d.*, and 7*s.* 8*d.*

Products.	5 per cent.			6 per cent.			7 per cent.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
100			3¼			4			4½
200			6½			8			9¼
300			10			11¾		1	1¾
400		1	1¼		1	3¾		1	6½
500		1	4½		1	7¾		1	11
600		1	7¾		1	11¾		2	3½
700		1	11		2	3½		2	8¼
800		2	2¼		2	7½		3	1
900		2	5½		2	11½		3	5½
1,000		2	9		3	3½		3	10
2,000		5	5¾		6	7		7	8
3,000		8	2¾		9	10¼		11	6
4,000		10	11½		13	1¾		15	4
5,000		13	8½		16	5¼		19	2¼
6,000		16	5¼		19	8¾	1	3	0¼
7,000		19	2	1	3	0¼	1	6	10¼
8,000	1	1	11	1	6	3½	1	10	8¼
9,000	1	4	8	1	9	7	1	14	6¼
10,000	1	7	4¾	1	12	10½	1	18	4¼
20,000	2	14	9½	3	5	9	3	16	8½
30,000	4	2	2¼	4	18	7½	5	15	0¾
40,000	5	9	7	6	11	6	7	13	5
50,000	6	17	0	8	4	4½	9	11	9¼
60,000	8	4	4½	9	17	3¼	11	10	1¾
70,000	9	11	9¼	11	10	1¾	13	8	6
80,000	10	19	2	13	3	0¼	15	6	10¼
90,000	12	6	7	14	15	10¾	17	5	2½
100,000	13	13	11½	16	8	9¼	19	3	6¾
Products giving less than 1¼*d.* for minute Calculations.	8	=	¼	6	=	¼	5	=	¼
	15	=	½	12	=	½	10	=	½
	23	=	¾	19	=	¾	16	=	¾
	30	=	1	25	=	1	22	=	1

Ivory.—An ordinary elephant produces 120 pounds, worth £60. England consumes 650 tons, for which it is necessary to kill 1,200 elephants yearly.

Jesuits.—The number in the various countries:—Germany, 2,875; France and Colonies, 2,789; Great

Britain and United States, 1,894; Spain and South America, 1,933; Italy, 1,558. The General of the Jesuits, published the statistics of the order showing that it counts 2,500 missionaries, and that it can boast of having 248 saints, 1,500 martys, 13 popes, 60 cardinals, 4,000 archbishops and bishops, and 6,000 authors.

Kings.—In 1883 there were 22 kings including emperors. The number who have ruled in various countries since the middle of the eleventh century has been as follows :—

	No.	Average Reign, Years.		No.	Average Reign, Years.
England	35	23	Spain	32	26
France	34	24	Denmark	39	21
Germany	39	21	Sweden	53	15
Russia	50	16	Turkey	35	17

The average reign of the above 317 monarchs was just 20 years.

Lace.—Great Britain employs 9,000 men and 41,000 women in this industry who produce annually to the value of £6,000,000, while nearly half a million of women are employed on the continent producing £30,000,000 yearly.

Lead.—The World's production of metallic lead in tons was :—

	1830.	1850.	1880.
United States.	3,700	36,000	89,000
Great Britain	48,000	56,000	51,000
France	1,100	7,000	32,000
Germany	9,500	16,000	58,600
Italy	8,000	12,000	33,000
Spain	23,000	27,000	92,300
Austria	7,000	10,000	8,900
Other European Countries	4,000	6,500	14,400
Total	104,300	170,500	379,200

Land.—The following table shows the total cultivated and uncultivated land :—

Countries.	Acres (Millions.)		
	Cultivated.	Uncultivated.	Total.
United States	285	1,620	1,805
Great Britain	47	23	70
Canada	16	1,902	1,918
France	67	49	116
Germany	68	57	125
Russia	195	894	1,089
Austria	57	85	142
Italy	27	41	68
Spain	22	90	42
Portugal	4	17	21
Belgium	5	1	6
Holland	5	2	7
Denmark	6	2	8
Sweden and Norway	15	156	171
Australia	11	1,847	1,858
Argentine Republic	4	773	777
Greece	2	9	11
Total	836	7,498	8,334

Leprosy.—There are 2,180 lepers in Norway. The numbers in Spain and Italy are considerable. In the Sandwich Islands the disease is so prevalent that the island of Molokai is set apart for lepers, who were under the direction of a French priest. In the Seychelles Islands leprosy is also common. In Cyprus a leper farm was established in 1820, area, 100 acres; tillage, 11 acres; house, 26 rooms occupied by 33 males and 13 females; 5 couples married; 2 have children quite healthy, but the rest are childless; all have lost fingers. One woman of 80 has been there 50 years. The death-rate is 16 per cent. per annum.

Lakes.—The length, width, and area of the principal lakes of the world, in miles, is as follows :—

	Length.	Width.	Area, Miles.
Superior	420	160	32,100
Michigan	320	80	25,600
Huron	280	190	24,000
Haikal	360	35	14,800
Great Bear	250	250	11,000
GreatSlave	300	50	10,000
Erie	240	80	10,000
Winnipeg	280	5 to 57	9,000
Ontario	180	40	7,650
Ladoga	125	75	6,250
Maracaybo	150	60	5,300
Athabasca	250	40	5,000
Titicaca	—	—	3,500
Anlogas	—	—	2,000
Great Salt	75	35	1,800
Nicaragua	110	40	1,700
Champlain	123	12	1,300
Lake of the Woods	75	75	1,200
			180
Constance	45	10	

Languages.—The following table shows the principal languages spoken throughout the civilised world (thousands omitted) :—

Countries.	English.	French.	German.	Italian.	Spanish.	Portuguese.	Russian
Great Britain	35,200	100	100	40	10	—	—
France	180	36,400	800	250	20	—	—
Germany	120	600	43,300	10	—	—	20
Russia	10	200	3,700	10	2	—	63,200
Austria	5	100	11,800	450	2	—	3,230
Italy	10	840	3	27,330	1	—	—
Spain	4	60	1	1	16,390	20	—
Portugal	2	10	1	—	30	4,220	—
Holland	5	20	400	—	—	—	—
Belgium	15	3,820	240	—	—	—	—
Sweden and Norway	3	40	60	—	—	—	5
Switzerland	5	608	2,031	162	—	—	—
United States	50,300	840	6,130	160	370	10	30
British Colonies	11,680	1,220	80	40	40	—	—
French Colonies	30	2,360	10	50	30	—	—
Spanish America	90	150	10	880	22,300		
Brazil	2	20	80	70	160	8,130	—
The East	2,200	430	50	420	1,180	370	240
The World	99,861	47,848	68,826	27,873	40,835	12,810	66,725

Use of Letters in Various Languages.

The figures in the columns of the following table indicate the average number of times the letters of the alphabet given in line are used in every 1,000 consecutive letters in prose composition in the several languages named. The blanks show either that the letters are not used, or that the use does not reach 1 in 1,000 letters, such as "Z" in English or "X" in Spanish :—

	English	French.	Italian.	Spanish.	Latin.	German.
A .	64	80	99	121	79	64
B .	11	8	2	11	11	20
C .	20	30	40	48	42	22
D .	34	35	42	55	29	71
E .	137	184	131	145	92	178
F .	23	8	12	6	13	14
G .	19	12	20	11	22	31
H .	65	2	11	20	2	40
I .	71	76	103	37	120	86
J .	1	2	4	8	4	6
K .	6	—	—	—	—	9
L .	40	47	71	61	29	29
M .	24	37	12	26	62	22
N .	66	73	71	55*	44	110
O .	76	41	96	107	50	27
P .	23	33	28	24	32	11
Q .	1	8	9	15	11	—
R .	70	73	52	69	77	84
S .	75	99	74	69	79	55
T .	88	70	55	48	66	48
U .	34	58	47	46	106	40
V .	18	17	15	10	18	9
W .	16	—	—	—	—	20
X .	1	5	—	—	9	—
Y .	17	2	—	5	—	—
Z .	—	—	6	3	.	4
Total .	1,000	1,000	1,000	1,000	1,000	1,000

Light.—It requires 50 pounds of candles to produce as much light as 1,000 cubic feet of gas.

Loss of Light by Use of Shades.

Glass, etc.	Thickness. Inches.	Loss. Per cent.
American Enamelled . .	1-16	51·23
Crown	1-8	13·08
Crystal Plate . . .	1-8	8·61
English	1-8	6·15
Porcelain Transparency . .	1-3	97·68
Window, double English .	1-8	9·39
" " German .	1-8	13·0
" single " .	1-16	4·27
" " ground .	1-16	65·75
" green . . .	1-16	81·95

Lighthouses.—There are about 700 lighthouses in the United States (nearly 500 in Canada), or *one-third* the total number in the world.

Libraries.—The principal libraries of the world are :—

Name of Library.	City.	Volumes.	Date.
National (France) .	France . .	2,164,000	1350
British Museum .	London . .	1,161,000	1753
Imperial . .	St. Petersburg .	1,079,000	1714
Royal . . .	Dresden . .	900,000	1555
Royal . . .	Munich . .	800,000	1660
Royal . . .	Berlin . .	700,000	1650
Royal . . .	Copenhagen .	500,000	1550
Imperial . .	Vienna . .	400,000	1440
University . .	Gottingen .	400,000	1734
Grand Ducal . .	Darmstadt .	380,000	1760
Congressional .	Washington .	380,000	1802
University . .	Leipzig . .	350,000	1543
Public . . .	Boston . .	350,000	1852
University . .	Breslau . .	340,000	1811
Bodleian . .	Oxford . .	330,000	1598
University . .	Heidelberg .	310,000	1703
City . . .	Hamburg .	300,000	1529
Fac'y of Advocates	Edinburgh .	300,000	1680
City . . .	Strasburg .	300,000	1531
University . .	Munich . .	280,000	1575
Royal . . .	Brussels . .	250,000	1400
University . .	Cambridge .	250,000	1475
University . .	Freiburg . .	250,000	1454
Ducal . . .	Gotha . .	240,000	1640
Arsenal . . .	Paris . .	225,000	1781
Royal . . .	Konigsberg .	220,000	1544
National . .	Madrid . .	220,000	1712
University . .	Christiania .	200,000	1811
University . .	Bologna . .	200,000	1690
National . .	Naples . .	200,000	1780
Yale . . .	New Haven .	195,000	1700
Astor . . .	New York .	185,000	1849
University . .	Bonn . .	185,000	1818
Mercantile . .	New York .	185,000	1820
Harvard . .	Cambridge, U.S.A	165,000	1638
Mercantile . .	Philadelphia .	140,000	1821

Life Period and Fecundity of Birds :—

	Years.		Years.
Blackbird . .	10 to 12	Peacock . .	24
Blackcap . .	15	Pelican . .	40 to 50
Canary, if it does		Pheasant . .	15
not couple .	24	Partridge . .	15
Chaffinch . .	20 to 24	Pigeon . .	20
Crane . .	24	Raven . .	100
Crow . . .	100	Robin . .	10 to 12
Eagle . . .	100	Skylark . .	10 to 30
Fowl, common .	10	Sparrow Hawk .	40
Goldfinch . .	10 to 15	Starling . .	10 to 12
Goose . . .	50	Swan . . .	100
Heron . .	60	Thrush . .	8 to 10
Lark . . .	16 to 18	Titlark . .	5 to 6
Linnet . .	14 to 23	Wheatear . .	2
Nightingale .	16 to 18	Wren . .	2 to 3
Parrot . .	10		

Eggs at a Sitting.

Eagle . . .	2 to 3	Pheasant . .	10 to 20
Falcon . .	2 to 4	Sparrow . .	4 to 6
Fowl, domestic .	6 to 20	Sparrow Hawk .	2 to 5
Hawk . .	2 to 4	Stork . . .	2 to 3
Owl . . .	2 to 6	Swallow . .	5 to 6
Partridge . .	14 to 20	Wren . . .	10 to 16

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* This number includes the use of the "Ñ" (equivalent to "NY" in English) three times.

LINEN.—The product of this industry is shown by the following table :—

COUNTRIES.	Thousands.		
	Spindles.	Power-Looms.	Flax, Tons.
United States . . .	13	7	20
Great Britain . . .	1,485	45	107
France	762	23	66
Germany . . .	327	8	35
Russia	145	2	40
Austria	415	5	60
Italy and Switzerland .	94	1	10
Belgium and Holland .	296	6	30
Total . . .	3,507	97	308

LOCOMOTIVES.—There are 63,020 locomotives in use throughout the world, of which 18,000 are in the United States. An ordinary locomotive on freight trains will burn nearly double the amount of coal as compared with passenger for same distance. The average cost is about £2,000, and during its life will run about 200,000 miles.

MAIZE (Corn).—See *Grain*.

MANURE.—The annual production per animal is : Cow or ox, 10 loads of dung ; one young ox or cow, 5 loads ; horse, bed in stable, 15 loads ; turned out to grass, 2½ loads ; ass, 2 tons.

The comparative value of manures as shown by the following table of deductions are from analyses made by Payne and Boussingault :—

KINDS OF MANURE.	Water per 100 pounds.	Nitrogen in 100 lbs. of matter.		Quality according to state.		Equivalent according to state.	
		Dry.	Wet.	Dry.	Wet.	Dry.	Wet.
Farm-yard Dung . .	79·3	1·95	6·41	100	100	100	100
Dung Water . . .	99·6	1·54	0·06	72	2	127	68
Wheat Straw . . .	19·3	0·30	0·24	15	60	650	167
Rye " . . .	12·2	0·20	0·77	10	42·5	973	235
Oat " . . .	21·0	0·36	0·23	18	70	542	143
Barley " . . .	11·0	0·26	0·23	13	57·5	750	174
Wheat Chaff . . .	7·6	0·94	0·85	48	212·5	207	47
Pea Straw . . .	8·5	1·95	1·79	100	447·0	100	22
Buckwheat Straw . .	11·6	0·54	0·48	27	120	361	83
Dried Potato Tops . .	12·9	0·43	0·37	22	82·5	453	108
Withered leaves of Beet roots	88·9	4·50	0·50	230	125	43	80
" " " Potatoes	76·0	2·30	0·55	117	137·5	85	73
" " " Carrots .	70·9	2·94	0·85	150	212·5	66	47
" " " Heather	7·0	1·90	1·74	97	425	103	23
" " " Oak .	25·0	1·57	1·18	80	293	125	34
" " " Poplar .	51·1	1·17	0·54	66	134	167	74
" " " Beech .	39·3	1·91	1·18	78	294	102	34
Clover Roots . . .	9·7	1·77	1·61	90	402·5	110	25
Burnt Seaweed . . .	3·8	0·40	0·38	20	80	488	105
Oyster Shells . . .	17·9	0·40	0·32	20	80	488	125
Sea Shells	—	0·05	0·05	3	13	3750	769
Seaside Marl . . .	1·0	0·52	0·51	26	128	377	78
Solid Cow Dung .	85·9	2·30	0·32	117	80	84	125
Urine of Cows . . .	83·3	3·80	0·44	194	110	51	91
Solid Horse Dung . .	75·3	2·21	0·55	113	137·5	88	73
Horse Urine . . .	79·1	12·50	2·61	641	625·5	15·5	15⅓
Pig Dung	81·4	3·37	0·63	172	157·5	58	63
Sheep Dung . . .	63·0	2·99	1·11	153	277·5	65	36
Pigeon Dung . . .	9·6	9·02	8·30	462	207·5	21·5	5
Guano	19·6	6·20	5·00	323	124·7	31·5	80
Dog	11·3	15·73	13·95	807	348·7	12·5	28·5
Fresh Bones . . .	30·0	—	5·31	—	132·6	—	7·5
Feathers	12·9	17·61	15·34	903	383·5	11	2·5
Woollen Rags . . .	11·3	20·26	17·98	1039	449·5	9·5	2¼
Horn Shavings . . .	9·0	15·78	14·39	809	359	12⅓	3
Coal Soot	15·6	1·59	1·35	81	337·5	122	30
Wood Soot	5·6	1·31	1·15	67	287·5	149	35
Millet Straw . . .	19·0	0·96	0·79	94	19·5	203	57

MARBLE.—It is 7 per cent. heavier than stone, and 5 per cent. lighter than granite. One cubic foot weighs 160 lbs. : that is, 14 cubic feet per ton.

MARRIAGE. — In all countries about 5 per cent. of marriages prove barren, the tendency being greatest among consanguineous marriages. Among the English nobility, for example, 19 per cent. are childless. Married women live 2 years longer than single ones, although 1 in 70 dies in childbirth, since 3 births in 1,000 costs the mother's life.

A Woman's Chances of Marriage at Various Ages.—This curiously constructed exhibit by Dr. Granville is drawn up from the registered cases of 876 married women in France. Of the 876 tabulated, there were married :—

Yrs. of age.	Yrs. of age.	Yrs. of age.
3 at 13	59 at 23	7 at 33
11 at 14	53 at 24	5 at 34
16 at 15	36 at 25	3 at 35
43 at 16	24 at 26	0 at 36
45 at 17	28 at 27	2 at 37
77 at 18	22 at 28	0 at 38
115 at 19	17 at 29	1 at 39
118 at 20	9 at 30	0 at 40
86 at 21	7 at 31	
85 at 22	5 at 32	

NATURAL HISTORY. — According to Professor Phillips, there are in the territorial world 115,500 animals ; 59,000 plants. In fresh water, 3,560 animals ; 100 plants. Marine, 11,750 animals ; 1,000 plants ; a total of 130,810 animals and 60,100 plants.

NICOTINE.—Orfila found in Havana tobacco, 2 per cent. ; French tobacco, 6 per cent. ; Virginia, 7 per cent. ; Brazilian, much higher.

NITRE is found in Chili. Atacama exports 350,000 tons per annum ; the nitre is found about 2 feet below the surface, and 4 feet in thickness.

OCCUPATIONS.—The workers of all nations is shown by the following table:—

Countries.	Thousands.			Ratio.		
	Agriculture.	Manufacture.	Various.	Agriculture.	Manufacture.	Various.
United States	7,713	3,526	18,876	26	12	62
Great Britain	2,989	6,241	11,289	14·6	30·4	55·0
France . .	14,162	6,615	6,988	51	24	25
Germany .	12,920	10,140	7,014	43	34	23
Russia . .	40,590	2,436	6,494	81	5	14
Austria . .	13,755	3,266	7,987	55	13	32
Italy . .	12,862	1,274	4,174	70	7	23
Spain . .	3,360	1,344	6,416	30	12	58
Portugal	1,251	220	1,306	45	8	47
Belgium .	1,512	1,436	828	40	38	22
Holland	1,563	321	806	58	12	30
Norway and Sweden	3,540	520	1,750	61	9	30
Total .	116,217	37,339	73,928	51	17	32

OPERATIVES.—The number employed throughout the world in thousands is:—

Countries.	In Factories.		Mining.	Handicraft.	Total.	Ratio to Population Per Cent.
	Textile.	Various.				
Germany .	632	480	231	8,797	10,140	22
Great Britain	1,060	720	550	3,911	6,241	18
France . .	620	430	206	5,359	6,615	18
United States	545	1,534	660	787	3,526	7
Austria . .	360	490	92	2,324	3,266	9
Russia . .	354	286	207	1,589	2,436	3
Italy . .	130	240	36	868	1,274	5
Spain . .	90	110	71	1,073	1,344	8
Belgium .	280	130	105	921	1,436	26

OPIUM.—The annual shipments from India are 6,005 tons valued at £12,640,000. The Chinese impose a duty of £5 per ton. It is retailed there at double the price of native opium. It is claimed that there are over three millions of opium-smokers in China.

OSTRICHES.—Cape Colony leads in the production of Ostrich feathers: 35,000 birds are plucked annually, averaging 3 lbs. per bird. The world's production is as follows:—Cape Colony, 260,000 lbs.; Buenos Ayres, 160,000 lbs.; Tripoli, 20,000 lbs.; Egypt, 4,000 lbs.; Morocco, 2,000 lbs. Within a few years a large Ostrich farm has been started in Southern California, under most favourable encouragement.

OYSTERS.—The yearly production in millions is:—United States, 11,200; Portugal, 600; France, 380; Great Britain, 300. Baltimore packs 7 million bushels annually. Oysters should be 4 years old before fit to eat.

PALMS.—There are 13 million date-palms in India which produce annually 4 lbs. of sugar each. In Egypt there are 4½ million date-palms.

PAPER.—The production and consumption in each country is:—

Country.	In Million lbs.	
	Production.	Consumption.
United States	520	540
Great Britain	470	430
Germany	450	410
France	380	330
Austria	160	120
Italy	105	110
Russia	80	90
Belgium	70	40
Scandinavia	38	30
Spain	20	32
Switzerland	20	18
Holland	16	16
Canada	14	18
Portugal	10	10
Spanish America . . .	2	44
Australia	—	17
Turkey and Greece . . .	—	12
Other Countries . . .	—	98
Total	2,365	2,365

The daily papers of the world consume 490, weekly and monthly, 380, and books, 150 million lbs. annually. Paper is now used in building, in the manufacture of wheels for railroad cars, in the manufacture of flour barrels and water pails, and in various other ways.

PENS.—Great Britain manufactures 810 million steel pens annually; France, 420, and the United States, 105. Over 4 million steel pens are consumed daily.

PHYSICIANS.—The number of doctors and surgeons in various countries is as follows:—England, 15,920; Scotland, 3,455; Ireland, 3,560; France, 10,743; Germany, 32,000; Russia, 13,475; Austria, 10,000; Italy, 9,400; Spain, 5,200; Belgium, 2,893; Scandinavia, 1,120; United States, 65,000.

PLAGUES.—Remarkable plagues of modern times:—

Date.	Place.	Deaths.	Week.	Deaths per week.
1656	Naples . . .	300,000	28	10,400
1665	London . . .	68,800	33	2,100
1720	Marseilles . .	39,100	36	1,100
1771	Moscow . . .	87,800	32	2,700
1778	Constantinople .	170,000	18	9,500
1798	Cairo . . .	88,000	25	3,500
1812	Constantinople .	144,000	13	11,100
1834	Cairo . . .	57,000	18	3,200
1835	Alexandria . .	14,900	17	900
1871	Buenos Ayres . .	26,300	11	2,400

In the Great Plague of 1346 over 876,000 victims were reported in 15 of the cities of Europe.

Ploughing.—Showing the distance travelled by a horse in ploughing an acre of land, and the quantity of land cultivated per day, computed at the rate of 16 and 18 miles per day of 9 hours :—

Breadth of furrow slice.	Space travelled in ploughing an acre.	Extent ploughed per day.	
Inch.	Miles.	18 Miles.	16 Miles.
7	$14\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{8}$
8	$12\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{4}$
9	11	$1\frac{3}{5}$	$1\frac{1}{2}$
10	$9\frac{9}{10}$	$1\frac{4}{5}$	$1\frac{3}{5}$
11	9	2	$1\frac{3}{4}$
12	$8\frac{1}{4}$	$2\frac{1}{5}$	$1\frac{9}{10}$
13	$7\frac{1}{2}$	$2\frac{1}{3}$	$2\frac{1}{10}$
14	7	$2\frac{1}{2}$	$2\frac{1}{4}$
15	$6\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{2}{5}$
16	$6\frac{1}{6}$	$2\frac{9}{10}$	$2\frac{3}{5}$
17	$5\frac{3}{4}$	$3\frac{1}{10}$	$2\frac{3}{4}$
18	$5\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{9}{10}$
19	$5\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{10}$
20	$4\frac{9}{10}$	$3\frac{1}{5}$	$3\frac{1}{4}$

Popes.—The several countries of Europe are represented in the list of Pontiffs as follows :—English, 1 ; Dutch, 1 ; Swiss, 1 ; Portuguese, 1 ; African, 2 ; Austrian, 2 ; Spanish, 5 ; German, 6 ; Syrian, 8 ; Greek, 14 ; French, 15 ; Italian, 197 ; total, 257. Eleven have reigned over 20 years ; 69, from 10 to 20 ; 57, from 5 to 10 ; and 116 less than 5 years. Pope Leo XIII. is the 258th pontiff. When full the total number of the sacred college is 70—composed of Cardinal Bishops, 6 ; Cardinal Priests, 50 ; Cardinal Deacons, 14 ; there are 4 vacancies at present. The Roman Catholic Hierarchy throughout the world, according to official returns published at Rome in 1884, consisted of 11 Patriarchs, and 1,153 Archbishops and Bishops. Including 12 coadjutor or auxiliary bishops, the number of Roman Catholic archbishops and bishops now holding office in the British Empire is 134.

Postal Information.—*Inland Letters.*—If PREPAID, 1 oz. 1*d.* ; 2 oz. 1½*d.* ; 4 oz. 2*d.*, and ½d. for every additional 2 oz. Postage not prepaid, double ; insufficiently paid double the deficiency. Limit 18 × 9 × 6 in., except to or from a Government Office. LETTERS HAVE PRIORITY IN DELIVERY OVER POST CARDS, BOOK POST, AND PATTERN POST.

Inland Post Cards.—"Stout," 1 for ¾*d.*, 2, 1½*d.*, 3, 2*d.*, etc., and 5*s.* per parcel of 100, £12 6*s.* per quarter ream (5,040 cards) ; and "thin," 1 for ¾*d.*, 2, 1¼*d.*, 3, 1¾*d.*, etc., and 11*s.* per parcel of 240, £11 8*s.* per quarter ream (5,040 cards) ; Double, or Reply Post Cards, ½*d.* stamp on each portion, "stout," 1 for 1¼*d.*, 2, 2½*d.*, 3, 3¾*d.*, etc., and 5*s.* per parcel of 50 ; "thin," 1 for 1¼*d.*, 2, 2½*d.*, 3, 3½*d.*, etc., and 11*s.* for 120. Reply Cards are not sold in sheets like Single Cards.

Foreign Post Cards.—Single, 1*d.*, 1½*d.*, and 2*d.* each ; Reply Foreign Post Cards, 1*d.*, 1½*d.*, and 2*d.* each half. Transmissible to Postal Union Countries, see under "Rates of Postage." Single only for Australian Colonies, 3*d.* each.

Inland Telegrams.—Twelve words, or less, 6*d.* ; every additional word, ½*d.* Addresses are charged for.

Inland Book Post.—Books, Manuscripts, CIRCULARS,* etc., ½*d.* for every 2 oz. Limits, 5 lbs. ; size, 18 × 9 × 6 in. ; must not contain any letter † (unless wholly printed, or a circular-letter), or any enclosure which cannot be examined. If in a cover, must be opened at both ends, but may be tied with string.

Newspapers (*Inland*).—Each registered newspaper, ½*d.*, if prepaid, and if in cover, open at both ends, title must be visible. More than one, Book Post rate. If anything be written on a newspaper, or on cover, to be treated as a letter. Limits, 14 lbs. ; size, 24 × 12 × 12 in. Newspaper wrappers bearing ½*d.* stamps, 1 for ¾*d.*, 2 for 1¼*d.*, 3 for 1¾*d.*, 4 for 2½*d.*, 5 for 3*d.*, 7 for 4*d.*, 60 for 2*s.* 10¼*d.*, £1 2*s.* 10*d.* for 480. Wrappers bearing 1*d.* postage stamps, 1 for 1¼*d.*, 2, 2¼*d.*, 3, 3¼*d.*, 4, 4¼*d.*, 5, 5½*d.*, 6, 6½*d.*, 7, 7½*d.*, 8, 8½*d.* ; 8½*d.* for every complete 8 ; £1 1*s.* 3*d.* for 240.

Inland Parcel Post.—1 lb., 3*d.* ; 2 lbs., 4½*d.* ; 3 lbs., 6*d.* ; 4 lbs., 7½*d.* ; 5 lbs., 9*d.* ; 6 lbs., 10½*d.* ; 7 lbs., 1*s.* ; 8 lbs., 1*s.* 1½*d.* ; 9 lbs., 1*s.* 3*d.* ; 10 lbs., 1*s.* 4½*d.* ; 11 lbs., 1*s.* 6*d.* Limits, 11 lbs., and 3 ft. 6 in. in length. May measure 6 ft. : thus, 3 ft. 6 in. × 2 ft. 6 in. Must be prepaid, marked, "*Parcel Post,*" and handed into a Post Office. The Postmaster-General is not liable for loss, damage, or delay, but will, if certain conditions be complied with, make good the loss to the extent of £1. If 1*d.* be paid for insurance—compensation not exceeding £5 ; if 2*d.* be paid—£10.

Inland Pattern and Sample Post.—Packet, 4 oz., 1*d.* ; 6 oz., 1½*d.* ; 8 oz., 2*d.* Limits, 8 oz. ; size, 12 × 8 × 4 in. Mark "*Pattern Post*" or "*Sample Post*" ; open at both ends. Name, address, and trade of the sender must be printed on the wrapper above the address.

Foreign Pattern and Sample Post.—Patterns same as for Book Packets, except that the lowest charge is 1*d.* for a packet to any of the countries where the postage is ½*d.* for 2 oz. Limit dimensions, 2 ft. × 1 ft. × 1 ft. ; weight, various. Patterns and Sample Packets for places in the Postal Union limits, 8 × 4 × 2 in., 8 oz. ; except for Belgium, France, Greece, Italy, Japan, Luxemburg, Portugal, Switzerland (*viâ* France), the Argentine Republic, and the United States, the limits for which are 12 × 8 × 4 in.

Registration of Letters, Book Packets, etc.—Fee, 2*d.* Unregistered Inland Letters, which contain coin, watches, or jewellery, are charged on delivery with a registration fee of 8*d.* Loss up to £5 will, *ex gratia*, be made good if certain conditions are complied with. If 2*d.* be paid for insurance—compensation not exceeding £10.

Money Orders (*Inland*).—For £1, 2*d.* ; £2, 3*d.* ; £4, 4*d.* ; £7, 5*d.* ; £10, 6*d.* The remitter may have an order made payable ten days after date. If to be paid through a bank only, the order must be crossed. *Foreign.*—For all places abroad with which money order business is transacted, £2, 6*d.* ; £5, 1*s.* ; £7, 1*s.* 6*d.* ; £10, 2*s.*

Telegraph Money Orders (*Inland*).—Double the ordinary rate, viz. :—For £1, 4*d.* ; £2, 6*d.* ; £4, 8*d.* ; £7, 10*d.* ;

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* Viz., Letters in identical terms to several persons ; and wholly (or nearly so) printed, engraved, lithographed, or executed by some other mechanical process. Circulars must not be placed in envelopes, whether sealed or open, nor closed or gummed, else will be charged letter rate.

† An entry of the name of the sender is allowed.

£10, 1s., in addition to which a charge is made for the telegram at the Inland rate.

Remittances by Postage Stamps.—Money Order Offices are permitted to purchase undamaged postage stamps, if in strips, from the public at the charge of ½*d.* for every 1*s.* 8*d.*

Postal Orders.—For 1*s.* up to £1 in the United Kingdom, Malta, Gibraltar, and Constantinople. Poundage: for 1*s.* and 1*s.* 6*d.*, ½*d.*; 2*s.*, 2*s.* 6*d.*, 3*s.*, 3*s.* 6*d.*, 4*s.*, 4*s.* 6*d.*, 5*s.*, 7*s.* 6*d.*, 10*s.*, 10*s.* 6*d.*, 1*d.*; 15*s.* and 20*s.*, 1½*d.* Fill in name of payee who will sign at foot of order.

Newspapers (Foreign).—To be made up, etc., same as inland newspapers. Limit to Postal Union countries, 18 × 12 × 12 in.; 4 lbs. Other places, 24 × 12 × 12 in.; 5 lbs.

Foreign Book Post.—Open at both ends, but may be tied with string, which must however be easy to unfasten. Limits, 24 × 12 × 12 in., and 5 lbs.; to Postal Union countries, 18 × 12 × 12 in.; weight 4 lbs. New South Wales, Queensland, and Fiji—3 lbs.

Foreign and Colonial Parcel Post.—Rates range from 7*d.* to 4*s.* 7*d.* per lb., or 3 lbs., according to Postal Tariff, and from 4*d.* upwards for each lb. additional. Limits, from 1 to 11 lbs. Size, various. Compensation for loss or damage to a limited extent. No parcels other than Indian parcels can be insured, and that for a sum not exceeding £50.

General Postal Union.—To A, viz.: All the States of Europe, Azores, Canada (Dominion of), Balearic and Canary Islands, Cyprus, Egypt, Faröe Islands and Iceland, Gibraltar, Madeira, Malta, Marquesas Islands, Newfoundland, Persia (*viâ* Russia), St. Pierre-et-Miquelon, Tahiti, and United States.

To B, viz.: Antigua, Argentine Republic, Bahamas, Barbados, Bermuda, Bolivia, Brazil, *British Borneo*, British Guiana, British Honduras, Cameroons, *Ceylon*, Chili, Colombia (Republic of), Congo, Costa Rica, Danish Colonies (viz., Greenland, St. Croix, St. John, and St. Thomas), Dominica, Dominican Republic (San Domingo), Ecuador, Falkland Islands, French Colonies, Gambia, German Colonies, Gold Coast, Grenada, Grenadines, Guatemala, Hawaiian Islands, Hayti, Honduras (Republic of), *Hong Kong*, *India*, Jamaica, *Japan*, *Labuan*, Lagos, Liberia, Mauritius, Mexico, Montserrat, Netherland Colonies, Nevis, Nicaragua, Paraguay, Patagonia, *Persia* (*viâ* the Persian Gulf), Peru, Portuguese Colonies, St. Kitts, St. Lucia, St. Vincent (West Indies), Salvador, *Siam*, Sierra Leone, Spanish Colonies, *Straits Settlements*, Tobago, Tortola, Trinidad, Turks Islands, Uruguay, and Venezuela:—

RATES OF POSTAGE.	Letter, per ½ oz.	Post Card.	Newspaper.	Printed Papers, per 2 oz.
For countries in Class A .	2½*d.*	1*d.*	½*d.* per 2 oz.	½*d.*
For countries in Class B, which are not printed in *italics*, and for Hong Kong, Japan, and New Caledonia, *viâ* San Francisco	4*d.*	1½*d.*	1*d.* per 4 oz.	1*d.*
For countries in Class B, which are printed in *italics*, *viâ* Brindisi . .	5*d.*	2*d.*	1½*d.* per 4 oz.	1½*d.*
Do. by French packet (*except India*) . . .	5*d.*	1½*d.*	1½*d.* per 4 oz.	1*d.*

Commercial same as Printed Papers, but no packet less than 2½*d.* Patterns same as Printed Papers, except for countries where the postage is ½*d.* per 2 oz.; the lowest charge is 1*d.* Letters to nearly all these places must not contain gold, silver, precious stones, jewellery, etc., or dutiable goods, even if registered.

Unpaid letters to or from Postal Union countries, double the prepaid rate. Partially prepaid letters double the deficiency. No Foreign or Colonial letter may exceed 24 × 12 × 12 in.

Colonial and Foreign Money Orders.—For £2, 6*d.*; £5, 1*s.*; £7, 1*s.* 6*d.*; £10, 2*s.*, payable in nearly all the European States and most of the Colonies.

PULSE.—Nominally, the number of pulsations of human beings per minute, differs at different periods of life. At birth it is about 135. At the age of seven from 80 to 85. In adults 70 to 75. In old age 50 to 65. In females the pulse is quicker than in males.

The Horse,	32 to 38	pulsations per minute.
An Ox or Cow,	25 to 42	” ” ”
A Sheep,	70 to 79	” ” ”
The Ass,	48 to 54	” ” ”
Goat,	72 to 76	” ” ”
Dog,	90 to 100	” ” ”
Cat,	110 to 120	” ” ”
Rabbit,	120	” ” ”
Guinea Pig,	140	” ” ”
Hen,	140	” ” ”

PYRAMIDS.—The most important are those of India, Mexico, and Egypt. Those of the latter country are 70 in number and of different sizes. The largest, that of Cheops, occupied the labours of 100,000 men 20 years, ten years having been previously consumed in building the inclined way 50 yards wide and 40 feet high, and 8 miles long, to carry the stone from the quarries to Gizeh. 6,800,000 tons of stone were used in its construction.

QUARRIES.—The quarrying industries of the United States recently showed 1,525 establishments; capital, £5,082,900; producing 115,380,133 cubic feet, valued at £3,671,211; employing 39,723 labourers; 10,000 animals; 3,685 waggons; 265 vessels; 651 cars and 5 locomotives. The value of rock quarried was: Limestone and marble, £1,371,336 4*s.*; sandstone, £956,078 4*s.*; crystalline silicious rocks, £1,037,799 12*s.*; slate, £305,997.

RABBITS.—A pair of rabbits can become multiplied in four years into 1,250,000. They were introduced into Australia a few years ago, and now that colony ships 6 million rabbit skins yearly to England.

RAILWAY SIGNAL CODE.—One pull of the bell-cord signifies "stop;" two pulls mean "go ahead;" three pulls denote "back up." One whistle denotes "down brakes;" two whistles mean "off brakes;" three whistles signify "back up." Continued whistles indicate "danger." Rapid short whistles "a cattle alarm." A sweeping parting of the hands on the level with the eyes, signifies "go ahead." Downward motion of the hands with extended arms signifies "stop." Beckoning motion of one hand signifies "back." A sweeping motion of the hands over the head denotes "back slowly." Red flag waved up the track signifies "danger." Red flag stuck up by the roadside signifies "danger ahead." Red flag carried on a locomotive signifies "an engine following." Red flag hoisted at a station, is a signal to "stop." Lanterns at night raised and lowered vertically are a signal to "start." Lanterns swung at right angles across the track, mean "stop." Lanterns swung in a circle signify "back the train."

Rainfall.—The average annual rainfall, as published by the Smithsonian Institute, Washington, D.C., in the United States, is shown by the following table:—

Average Annual Rainfall in Europe.

	Inches.		Inches.
Aberdeen, Scotland	28·87	Liverpool, England	34·05
Bergen, Norway .	88·61	London, England .	24·04
Berlin, Prussia .	23·56	Manchester, England . . .	36·02
Bordeaux, France .	34·00	Mannheim, Germany . .	22·47
Brussels, Belgium .	28·06	Marseilles, France	23·04
Coimbra, Portugal	118·08	Milan, Italy . .	38·01
Cork, Ireland .	40·02	Naples, Italy .	29·64
Copenhagen, Denmark . .	18·35	Paris, France .	22·64
Dublin, Ireland .	21·01	Rome, Italy . .	30·86
Geneva, Switzerland	31·07	Stockholm, Sweden	20·04
Glasgow, Scotland .	21·33	St. Petersburg, Russia . .	17·03
Limerick, Ireland .	35·00		
Lisbon, Portugal .	27·01		

Reindeer.—A reindeer can travel with a sleigh 130 miles a day. They are worth usually about £1 10s. per head. There are in Finland 2,822 herds, 44,400 head; Norway, 2,400 herd, 101,800 head; Sweden, 3,200 herd, 220,800 head of deer.

Rice.—The world's production in tons by countries is:—India, 16,800,000; Japan, 3,450,000; Java, 2,740,000; Manilla, 1,800,000; Italy, 710,000; Ceylon, 480,000; United States, 90,000; Spain, 80,000.

Salmon.—Great Britain's annual fishing yields 3,600 tons, more than one-half of which is consumed in London. The salmon fishing of the Pacific coast yields annually nearly 20 million pounds. Six million pounds are consumed in California, the balance exported; one-half goes to England, one-fourth to Continental Europe, and the rest to New York.

Salt in Sea Water.—The percentage of salt in various seas is:—Caspian, 0·5; Black, 1·2; Baltic, 1·3; English Channel, 3·3; Red Sea, 4·3; Dead, 8·5; Mediterranean, 3·9; Atlantic Ocean, 3·7.

Sardines.—The exportation from France averages 450 million fish per annum, Spanish fisheries yield 1,260 million and France 980 million fish.

Sexes.—The ratio to population in the principal countries is shown by the following table:—

Countries.	Per 1000.	
	Male.	Female.
United States .	506	494
England . .	485	515
Scotland . .	481	519
Ireland . .	490	510
France . .	496	504
Germany .	489	511
Russia . .	497	503
Austria . .	485	515
Italy . .	503	497
Spain . .	496	504
Belgium . .	501	499
Holland . .	490	510
Denmark .	491	509
Sweden . .	484	516
Norway . .	491	509
Canada . .	. .	. .
Australia .	. .	. .

Sheep.—The accompanying table gives the number, and annual average slaughter each year, and tons of mutton produced per 100 inhabitants:—

Countries.	Thousands Omitted.			Per 100 Inhabitants.	
	Number.	Annual Slaughter.	Tons of Mutton.	Sheep.	Slaughter.
River Plate	76,230	6,000	100	2,540	200
Australia	65,915	4,000	90	2,410	140
United States . . .	49,237	14,000	340	95	27
Russia	48,820	19,600	370	60	24
Great Britain . . .	27,896	11,200	285	79	32
Germany	25,200	10,100	195	55	22
France	23,370	9,300	165	65	26
Austria	21,418	8,600	160	58	23
Spain and Portugal . .	25,217	10,200	120	128	50
Italy	6,980	2,800	55	25	10
Cape Colony . . .	11,280	2,400	40	1,070	230
Algeria	8,788	3,000	55	290	100
Norway and Sweden . .	4,990	2,000	43	57	23
Canada	3,330	1,300	35	75	30
Greece	2,292	900	15	138	55
Roumania	6,180	2,500	50	77	31
Belgium and Holland . .	1,434	600	16	16	6
Total	408,577	108,500	2,134	109	30

Sick.—The ratio of sickness rises and falls regularly with death-rate in all countries, as shown by Dr. Farr and Mr. Edmunds at the London Congress of 1860, when the following rule was established:

Of 1,000 persons aged 30, it is probable that 10 will die in the year, in which case there will be 20 of that age sick throughout the year, and 10 invalids.

Of 1,000 persons, aged 75, it is probable that 100 will die in the year, in which case the sick and invalids of that age will be 300 throughout the year.

For every 100 deaths let there be hospital beds for 200 sick, and infirmaries for 100 invalids.

Straw.—The world's production in million tons is:—Russia, 42; United States, 20; France, 17; Germany, 16; Austria, 14; Great Britain, 10; Italy, 7; Spain, 7; Belgium, 2; Denmark, 2; Sweden, 2; Holland, 1.

Strength.—A comparative scale of the strength of man at 100 is:—

Ordinary man .	. 100	Farnese Hercules	. 362
Byron's Gladiator	. 173	Horse . .	. 750

SOUND.—In the year 1815 cannon fired at the battle of Waterloo was heard at Dover, distant 180 miles. Mr. Glaisher, the aeronaut, states that he heard a musket shot and a dog bark at an altitude of 2 miles, and a railroad train at 4 miles.

SOVEREIGNS, ETC., OF EUROPE, with their ages in 1895.—

Country.	Name and Title.	Age	Acc.
Austria	Francis Joseph I., Emp.	65	1848
Belgium	Leopold II., King	60	1865
Denmark	Christian IX., King	77	1863
France (Republic)	Félix Faure, Pres.	—	1895
Germany	William II., Emperor	36	1888
Great Britain	Victoria, Queen	76	1837
Greece	George I., King	50	1863
Italy	Humbert I., King	51	1878
Montenegro	Nicholas I., Prince	54	1860
Netherlands	Wilhelmina, Queen	15	—
	Emma, Queen Regent	37	1890
Portugal	Carlos I., King	32	1889
Rome (Leonine City)	Leo XIII., Pope	85	1878
Roumania	Charles I., King	56	1881
Russia	Nicholas II., Emperor	27	1894
Servia	Alexander I., King	19	1889
Spain	Alfonso XIII., King	9	—
	Maria Christina, Q. Rgt.	37	1885
Sweden & Norway	Oscar II., King	66	1872
Switzerland (Repub.)	Emile Frey, Presdt.	57	1893
Turkey	Abdul Hamid II., Sultan	53	1876

STEEL.—The number of works, converters, capacity, tons made, and the ratio manufactured by each country, is as follows:—

Countries.	Works.	Converters.	Capacity, Tons.	Tons made.	Ratio.
United States	20	36	2,200	1,374,000	27·0
Great Britain	23	116	2,500	1,780,000	35·0
Germany	23	81	1,300	865,000	17·1
France	10	33	500	418,000	8·3
Austria	...	...	...	176,000	3·4
Russia	5	24	350	296,000	5·8
Belgium	4	18	380	135,000	2·7
Sweden	10	35	100	37,000	0·7
Total	95	333	7,330	5,081,000	100·0

TENSILE TEST OF STEEL.

Bar 8 inches long.

Sq. Inch. Section.	Strain, Tons per Sq. Inch.	Extension, Inches.
1·0000	13·93	·01
·9799	16·96	·10
·9331	23·43	·40
·8741	27·23	1·00
·8325	28·35	1·31
·7088	27·32	2·00
·5541	25·05	2·20

Elastic limit	17·40 tons.	Cohesion	45·21 tons.
Maximum strain	28·35 ,,	Extension	27½ per cent.
Breaking load	25·05 ,,	Contraction	44½ ,, ,,

Taking the strength of Swedish iron at 100, the tensile strength of steel compares thus:—

Swedish iron	100	Cannon steel	173
Boiler steel	118	Spring steel	202

A bar of chrome steel, half-inch square and 5 inches long, gives a strength of 141,000 pounds per square inch, being 37 per cent. more than carbon steel.

Tensile and Transverse.—A crushing force of 1,000 per square inch on a bar 1 inch square and 12 inches long, gives the following ratios of strength:—

	Tensile.	Transverse.		Tensile.	Transverse.
Stone	100	10	Cast iron	158	20
Glass	123	10	Timber	1,900	85

SUICIDES.—According to sex the percentage is:—

	Male.	Female.
United States	72	28
England	73	27
Scotland	75	25
Ireland	77	23
France	79	21
Germany	82	18
Russia	79	21
Austria	81	19
Switzerland	88	12
Holland	84	16

According to Religion:—

	Per Million Persons.		
	Protestant.	Catholic.	General Ratio.
United Kingdom	63	17	56
Prussia	170	52	131
Bavaria	195	69	102
Austro-Hungary	140	90	96
Switzerland	262	81	202

TELESCOPES.—The aperture of the larger telescopes of the world are, in inches:—Lord Rosse, 72; Lassell, 48; Herschell, 48; Polkova, 30; San Jose, California, 28; Vienna, 27; Washington, 26; New Castle, 25; Pultowa, 16; Cambridge, Massachusetts, 15; Paris, 13; Greenwich, 12; Cincinnati, 12; Munich, 11; Rome, 10; Berlin, 10.

Lord Rosse's telescope brings the moon apparently within 50 miles of view.

TEMPERATURE.—The temperature of sea and mountains varies as follows:—

SEA.

Fathoms.	Equator.	38 N.	Fathoms.	Equator.	38 N.
0	75·9	70·0	800	37·1	38·1
100	55·6	63·5	1,000	36·9	37·9
200	46·6	60·6	1,200	36·7	37·1
300	42·2	60·0	1.500	36·1	36·7
500	38·9	46·7	2,700	34·7	35·2

MOUNTAINS (Humboldt).

Height, Feet.	Depression of Thermometer.	Height, Feet.	Depression of Thermometer.
3,724	14·07	10.790	34·73
6,740	23·31	15.744	49·53
9,029	30·07	19.286	57·38

THERMOMETER.—

	Reaumur.	Centigrade.	Fahrenheit.
Freezing point	0	0	32
Vine cultivation	8	10	50
Cotton cultivation	16	20	68
Temperature of Brazil	24	30	87
Hatching Eggs	32	40	104
	40	50	122
	48	60	140
	56	70	158
	64	80	176
	72	90	194
Water boils	80	100	212

TREES.—The maximum age of trees is:—

	Years.		Years.		Years.
Palm	250	Lemon	640	Spruce	1,300
Elm	355	Plane	720	Oak	1,000
Cypress	388	Cedar	800	Olive	2,000
Ivy	448	Chestnut	860	Yew	2,880
Maple	516	Walnut	900	Baobab	5,100
Larch	576	Lime	1,076	Dragon	5,900

VOLCANOES AND EARTHQUAKES.—As many as 6,102 earthquakes have been catalogued, of which 5,879 occurred in the Northern hemisphere. About 200 active volcanoes are recorded, of which 79 are in islands. More than 30 great eruptions of Etna, have occurred within the records of history. In an eruption in 1693 the city of Catania was overturned in a moment, and 18,000 people perished in its ruins. There have been 29 destructive earthquakes in Calabria since 1692. Animals buried under the ruins in the earthquake of 1793, were taken out alive after 30 days, and human beings survived after being buried 12 or 16 days. Fissures in the ground, radiating like a broken pane of glass, were found 30 to 200 feet in depth. A new island called Carrao, was thrown up by a submarine volcano, in July 1831, in the disturbed seas of Sicily. It was preceded by local earthquakes and terrific noises, many days before. In 1783, Hecla, in Iceland, ejected two streams of lava, 40 or 50 miles long, 7 to 13 feet broad, and 100 to 600 feet deep, which destroyed 20 villages and 9,000 people. From April to July, 1815, Tomboro in Sumbawa, continued in violent eruption. The explosions were heard 980 and 720 miles, and only 26 of 12,000 inhabitants survived. The ashes darkened the air for 300 miles around. In 1759, the mountain of Jorillo, in Mexico, was thrown up from a plain 1,000 feet high, and numerous cones from 300 to 600 feet, on a space of four square miles in one night. In 1819, Jorillo threw ashes 140 miles. In the year 526, by an earthquake, 250,000 people perished in Antioch. In 1822, Aleppo, etc., was overthrown in six seconds, and 30,000 people perished. The series of shocks that destroyed Lisbon and a great part of Portugal, lasted but six minutes, on an otherwise fine morning on November 1, 1755. The Douro and Guadiana opened and let out gases, and the quay of Lisbon, with 30,000 people on it, sunk into an abyss and not one body arose. The sea rose 20 feet so far off as Carlisle Bay, Barbadoes, and was of a dark colour. A wave 60 feet high passed over part of Cadiz. In March 1812, by an earthquake, 12,000 people were killed in the city of Caracas only. Fourteen earthquakes, in different parts of the globe, were recorded in 1827, and perhaps this is the average number. An earthquake in Chili, February 1835, extended 500 miles north and south, and was felt 300 miles at sea. In 1746, an official account mentions the loss of 23 ships at Callao, some of which were carried over the city inland, and all the inhabitants of Callao, 5,000, destroyed; and similar circumstances occurred all along the whole coast. It is impracticable to follow the 200 volcanoes more or less in similar action, or the 14 or 20 annual earthquakes with their various devastations, but those described are examples of all.

WATER.—

1 cubic foot = $62\frac{1}{2}$ lbs. or $6\frac{1}{4}$ gallons.

Ditto sea water = 64 lbs.; or $6\frac{3}{4}$ gallons.

1 imperial gallon = 10 lbs. or 217 cubic inches.

224 gallons = 20 cwt. or 36 cubic feet.

A column of water, 12 inches high, 1 inch square = ·434 lbs.

A similar column, 1 inch diameter = ·341 lbs.

1 cylindrical foot = 4·9 gallons or 49 lbs.

An inch rainfall = $14\frac{1}{2}$ million gallons per square mile.

8 cubic feet snow produces 1 cubic foot water.

Current requires minimum fall, one-tenth of inch per mile.

WATER-POWER.—

Niagara = 10 million cubic feet per minute, say 3 million horse-power nominal, or 9 million real.

Ticino (Italy), fall 530 feet, turbines 300 revolutions per minute, with static pressure 250 lbs. per square inch.

The United States have 51,000 water-wheels, with $1\frac{1}{2}$ million horse-power aggregate

WATER SUPPLY.—Lake of Moeris, made by the Pharaoh of that name, was the largest reservoir in the world. It was fed by the flood water of the Nile. This reservoir was found to be 150 square miles in extent, having a bank 180 feet wide and 30 feet high. Twelve hundred square miles of country could be irrigated by it. Tlascala, an ancient city of Mexico, was fully supplied with fountains and baths. Zempoloa and Tezeuco had water in abundance, the last named being supplied after the modern style, through pipes. Water was conveyed to the city of Mexico from the spring of Amilco, near Churubusco, by means of pipes. During the first century, Rome was served at the rate of the London water supply, or sufficient for a population of 7,000,000. There were nine aqueducts; five more were added afterwards, but three of the old aqueducts suffice now. London has a supply of thirty gallons daily to each person. The supply in the large American cities, Cleveland, Baltimore, Boston, Cincinnati, Philadelphia, Chicago, Albany, Montreal, and New York, range from 40 to 100 gallons daily to each person. Mr. John Christopher Christensen, at Bethlehem, Pa., planned the first waterworks in the United States in 1762.

WILD BEASTS. In France 1,225 wolves were killed in 1882, for which the government paid £6,000. Game licences, 347,000 per annum.

Game licences in Germany, 146,000; slaughter, 20,000 foxes, 30,000 deer; 2,000,000 hares, 3,000,000 partridges.

The Russian forests contain over 170,000 wolves, which devour 200 children or travellers per annum.

Austrian large game killed per annum.

Bears . . .	160	Wolves . .	1,200
Lynxes . .	200	Foxes . . .	8,000

Besides 3,000 tiger cats and various other kinds.

In Java there are 270 persons killed by tigers, and 180 by crocodiles annually.

In India 21,000 persons and 53,000 cattle are killed yearly by tigers, snakes, etc. The Indian Government pays £10,000 per annum for killing 20,000 wild beasts and 120,000 snakes.

WEATHER.—Table for foretelling the weather through the lunations of the moon (Dr. Herschell and Adam Clarke) :—

If the New Moon, the First Quarter, the Full Moon, or the Last Quarter, enters—	In Summer.	In Winter.
Between midnight and 2 a.m.	Fair.	Hard frost unless wind is S. or E.
Between 2 and 4 a.m. .	Cold, frequent showers.	Snowy and stormy.
,, 4 and 6 a.m. .	Rain.	Rain.
,, 6 and 8 a.m. .	Wind and rain.	Stormy.
,, 8 and 10 a.m. .	Changeable.	Cold rain if wind is W., snow if E.
,, 10 and 12 a.m.	Frequent showers.	Cold and high wind.
At 12 noon and 2 p.m. .	Very rainy.	Snow and rain.
Between 2 and 4 p.m. .	Changeable.	Fair and mild.
,, 4 and 6 p.m. .	Fair.	Fair.
,, 6 and 8 p.m. .	Fair if wind N.W., rainy S. or S.E.	Fair and frosty if wind is N. or W., rain or snow if S. or S.E.
,, 8 and 10 p.m. .	Do.	Do.
,, 10 and midnight	Fair.	Fair and frosty.

Observations.—1. The nearer the time of the moon's change, first quarter full, and last quarter, is to *midnight*, the fairer the weather during seven following days. Range for this is from 10 at night till 2 next morning. 2. The nearer to *mid-day* the phases of the moon happen, the more foul or wet weather during the seven days following. 3. The moon's change entering from 4 to 10 of the afternoon, may expect fair weather.

WRECKS.—Tonnage lost yearly :—

	Steam.	Sailing.	Total.	Ratio to Shipping, Per cent.
United States . .	16,000	112,000	128,000	4·90
British . . .	90,000	170,000	260,000	3·50
French . . .	7,000	22,000	29,000	3·60
German . . .	6,000	40,000	46,000	3·80
Russian . . .	3,000	18,000	21,000	4·00
Austrian . . .	3,000	9,000	12,000	4·00
Italian . . .	1,500	27,500	29,000	2·90
Spanish . . .	3,500	13,500	17,000	3·70
Dutch . . .	3,000	14,000	17,000	4·05
Various . . .	59,000	130,000	189,000	4·00
Total . .	192,000	556,000	748,000	3·80

WHEAT.—The crop of the principal grain growing nations is :—

Countries.	Average Annual Yield.
	Bushels.
United States . .	512,763,500
France	340,232,377
India	252,000,000
Russia	220,000,000
Italy	146,173,634
Germany . . .	117,780,505
Austro-Hungary . .	117,140,308
Spain	117,000,000
Great Britain . . .	85,000,000
Australia . . .	45,014,174
Belgium	42,373,349
Turkey	40,000,000
Roumania . . .	28,000,000
Mexico	12,466,421
Netherlands . . .	11,393,917
Portugal . . .	8,722,517
Greece	5,000,000
Sweden	4,483,333
Servia	4,000,000
Norway	2,750,000
Denmark . . .	2,428,415
Switzerland . . .	2,000,000

WORK.—Foot tons of energy :—

Walking 1 mile .	17½	Dock labourer's day's work . . .	374
,, 4 miles .	70	Pile driving . .	332
Carrying 60 lbs. 1 mile	25	Pavior . . .	352
,, ,, 4 miles	100	Turning a winch .	374
Pedlar's day's work .	303	Man's ordinary work .	300
Convict's ,, .	310	Very hard work .	400

ZINC.—The annual productions in tons throughout the world is :—

	Ore.	Metal.	Yield. per cent.
Great Britain .	57,000	15,947	28
Prussia . . .	650,000	102,000	16
Belgium . . .	250,000	45,000	18
Sweden . . .	21,000	4,000	16
Russia . . .	50,000	8,000	16
Total . .	1,031,000	174,947	17

AGE AT WHICH NOTED WORK WAS DONE IN THE LIVES OF PROMINENT PEOPLE.

Early Brilliancy with Some; Later Achievement with Others.

Pitman invented phonography at 24.

Aldrich's "Babie Bell" appeared at 20.

Pope's "Essay on Man" appeared at 45.

Bismarck became prime minister at 56.

Poe wrote "The Raven" at the age of 36.

Howe patented his sewing-machine at 26.

Colt was 20 when he patented his revolver.

Stanley was 31 when he found Livingstone.

Halleck wrote his "Marco Bozzaris" at 37.

Locke, as "Nasby," was well-known at 27.

Clemens issued "Innocents Abroad" at 32.

Handel commenced musical education at 9.

Edison invented his duplex telegraphy at 22.

Miss Sedgwick's first novel appeared at 33.

Mrs. Southworth wrote her first novel at 25.

Victoria ascended the English throne at 18.

Columbus was 57 when he discovered America.

Pollok's "Course of Time" appeared at 29.

Dickens' first volume of "Sketches" appeared at 24.

Walter Scott wrote his first Waverley novel at 43.

Macaulay began his "History of England" at 47.

Worcester published his first large dictionary at 46.

Blaine was elected to Congress from Maine at 32.

Spurgeon crowded his church with hearers at 18.

Alexandre Dumas wrote his first plays at 22.

Bierstadt painted the "Yosemite" at the age of 31.

De Foe wrote his "Robinson Crusoe" at the age of 58.

Cuvier had become distinguished, as a naturalist, at 26.

John Milton was 41 when he wrote "Paradise Lost."

J. Fenimore Cooper published his first novel at 30.

Lamartine's first volume of poems was published at 30.

Mrs. Hemans' first volume of poems appeared at 14.

Stuart painted his famous picture of Washington at 38.

Carleton wrote "Betsey and I are Out" at the age of 26.

Harvey at 38 had discovered the circulation of the blood.

Browne, as "Artemus Ward," was first celebrated at 21.

Horace Greeley founded the New York *Tribune* at 30.

Jenny Lind was 29 when she sang in the United States

Bayard Taylor's first book of travels was published at 9'

Byron's first volume of poems came out when he was 18.

Darwin proclaimed his theories on evolution at the age of 50.

Pullman was raising buildings in Chicago at the age of 28.

Campbell's "Pleasures of Hope" appeared when he was 22.

Webster was 48 when he made his celebrated reply to Hayne.

Tennyson was 24 when his first volume of poems appeared.

Aristotle was called by Plato "the intellect of his school" at 17.

De Lesseps was 64 at the time of the building of the Suez canal.

Victor Hugo's first volume of poems appeared when he was 20.

Charlotte Bronte published "Jane Eyre," her greatest fiction, at 22.

Grant was 42 years old when he achieved his brilliant military success.

Barnum was the proprietor of the American museum, New York, at 31.

Adelina Patti sang in concerts at 8, and was a leading singer at 16.

Dr. Gall announced the location of the phrenological organs at 33.

Jules Verne wrote his first romance, "Five Weeks in a Balloon," at 35.

William III. (King of England), at 22 was an able general in Holland.

McCormick invented a grain cradle at 15, and produced his reaper at 22.

Hoe gave the double cylinder printing-press to the people at the age of 25.

Carl Linnæus, great Swedish botanist, had achieved high reputation at 24.

Shakspeare was at the height of his work in play-writing at the age of 40.

Wilkie Collins' first important literary work appeared when he was 24.

Morse was 40 when he demonstrated the practicability of the telegraph.

Boucicault's first play, "London Assurance," appeared when he was 19.

Thurlow Weed began the publication of the Albany *Evening Journal* at 33.

Mrs. Stanton called the first woman's-rights convention at the age of 32.

Schiller, the famous German poet, attained celebrity at 23 by his "Brigands."

Napoleon was made emperor of France and was at the height of his glory at 36.

John Adams, second President of the United States, was active as a politician at 30.

G. P. R. James wrote the stories entitled "A String of Pearls" when he was 17.

James Gordon Bennett began the publication of the New York *Herald* at 40.

Burns' first poetry began to appear when he was 16. He was distinguished at 27.

Thomas Moore published his "Little's Poems," and found himself famous thereby at 23.

Prescott was 41 when his "History of Ferdinand and Isabella of Spain" appeared.

Andrew Jackson Davis dictated "Nature's Divine Revelations" at the age of 23.

Sir Robert Peel, British statesman, began his public life in parliament as a Tory at 21.

Goldsmith's "Deserted Village," and his other best works, appeared after he was 31.

Alexander Volta, an Italian electrician, at 44 invented the voltaic battery or "pile."

Bryant wrote poetry for the newspapers at 10, and was the author of "Thanatopsis" at 19.

Hogarth established his fame as an artist at 36, when he painted "The Harlot's Progress."

Charles Lamb, an English poet and essayist, published his first collection of poems at 22.

George Stephenson, British engineer and father of railways, made his first steam-engine at 43.

Beethoven, the famous Prussian musical composer, began to publish his own compositions at 13.

Mozart displayed musical talent at 3, was a prodigy at 6, and had produced his first opera at 15.

James Parton came prominently before the people through his "Life of Horace Greeley" at 33.

Anna Dickinson was 18 when she startled a woman's-rights convention with her oratorical power.

Ben Jonson, the English dramatist, became famous at 24 by his comedy of "Every Man in His Humor."

Rt. Hon. Charles James Fox, British statesman and orator, at 25 was distinguished in parliament.

John Dryden, an English poet, wrote well at 29, but was 50 before recognized as a writer of the first order.

Michael Angelo was near 80 when, as an architect, he designed the grand dome of St. Peter's at Rome.

Sir William Herschel made his own telescopes and became renowned for his scientific discoveries at 43.

Humboldt's first work on natural history was published at 21; he concluded his "Cosmos" at 82, and died at 90.

Noah Webster began work upon his great dictionary at 49, and brought it out twenty-one years afterwards.

Alexander Pope published his "Pastorals" at 16, and translated Homer's "Iliad" when between 25 and 30.

Sir Isaac Newton had made his three grand discoveries concerning light, fluxions and gravitations at 24.

John Napier, a Scottish baron, was born when his father was only 16; he published his system of logarithms at 64.

George W. Curtis published his first book, "Nile Notes of a Howadji," the result of a visit to Egypt and Syria, at 26.

William Cowper, an esteemed British poet, did not begin to write until past middle age, and gained his first success at 54.

William Wordsworth, one of the gentlest and purest of British poets, did not attain high rank as a writer until about 40.

Lord John Russell, British statesman, at 27 began his career as a parliamentary reformer; was three times prime minister.

Henry J. Temple (Lord Palmerston), British statesman, was fully 45 before he clearly displayed his powers as a statesman.

Hannibal, the famous Carthagenian warrior, held a high military command at 18, and had become eminent as a general at 26.

Voltaire, while in prison on suspicion of being the author of a libel against the government, wrote his first tragedy at 22.

Rt. Hon. Benjamin Disraeli (earl of Beaconsfield), was famous as a novelist at 22; at 44 was a political leader in parliament.

Alexander the Great governed Macedonia wisely at 16, began his career as a successful conqueror of nations at 20, and died at 32.

William Pitt (earl of Chatham), British statesman, won distinction as a debater in parliament at 32 by his reply to Horatio Walpole.

Bartholdy Mendelssohn possessed at an early age a strong inclination for music, and his first musical compositions were published at 15.

Lope de Vega, a Spanish poet of considerable reputation, found time during a life of 73 years to write 497 plays and much other matter.

Maria Edgeworth, a British authoress, began to write the series of novels and tales by which she achieved a lasting literary fame, at 34.

James Watt, a Scotch mathematical instrument maker, at 14 constructed an electrical machine; at 27 invented the modern steam-engine.

William Pitt (2d), British statesman, son of the earl of Chatham, was an excellent scholar at 14, was chancellor of the exchequer at 24, and prime minister at 25.

Sir Humphry Davy, famous British chemist and philosopher, published his first essays at 21, and was professor of chemistry at the Royal institution at 23.

Sir Thomas More, English statesman, precocious in wit and learning, successful as a lawyer, was knighted and made secretary of the exchequer at 41.

Sir Robert Walpole, English statesman, at 32 was British secretary of war and leader of the whigs in the House of Commons; was prime minister 21 years.

Torquato Tasso, noted Italian poet, was exceedingly precocious in youth; at 17 had written his "Rinaldo;" at 31 published his famous "Jerusalem Delivered."

Lamartine published his "Poetical Meditations" at 30, selling 45,000 copies in four years, and reaping corresponding fame; at 57 appeared his "History of the Girondists."

William Wilberforce, British statesman and philanthropist, displayed talent for elocution at 7; at 21 entered parliament, and had gained a high reputation before he was 25.

Francis Joseph Haydn, the celebrated Prussian composer, brought out six grand symphonies in London at 59, and produced his greatest work, "The Creation," at 67, at Vienna.

Washington Irving contributed to the periodical press of the United States at 19, published his "History of New York" at 26, his "Sketch-Book" at 35, and his "Life of Washington" at 72-76.

John Stuart Mill, an English philosopher, became first widely known at 37 by the publication of his "System of Logic," and his second great work, "Principles of Political Economy," appeared at 42.

Jay Gould was 18 when he published a history of Delaware county, New York. He was 21 when he superintended the extensive tanning works of Pratt & Gould at Gouldsborough in Pennsylvania, and was distinguished on Wall street before he was 30.

The Duke of Wellington, greatest of modern British warriors, subdued the Mahratta dominion in India at 35; at 39 commanded the allied British army in Spain, and won the battle of Waterloo and finished the dynasty of Napoleon I. by the time he was 46.

Correggio, the illustrious Italian artist, became a painter through his natural genius and without a technical education; at 30 he began his greatest work, the fresco of "The Assumption of the Virgin" in the cathedral at Parma, which was completed in about four years.

Francis Bacon, philosopher and lord chancellor of England, distinguished for boyish wit, at 11 speculated on the laws of the imagination; was called to the bar at 21; at 28 was counsel extraordinary to Queen Elizabeth; entered parliament at 32; at 57 was created lord high chancellor.

Benjamin Franklin, American philosopher and statesman, at 38 founded the university of Pennsylvania and the American Philosophical society; about 46 invented the lightning-rod, and about the same time produced his well-known "Franklin" or open stove; at 50 Oxford and Edinburgh universities conferred upon him their highest degrees.

Galileo, illustrious as an Italian astronomer, in childhood constructed mechanical toys; at 19 discovered peculiarities of the pendulum; at 25 was professor of mathematics in the university at Pisa; at 46 discovered the satellites of Jupiter; at 56 suffered persecution for declaring that the earth moves and the sun does not.

Oceans, Seas, Bays and Lakes.

Oceans.	Sq. Miles.
Pacific, about	80,000,000
Atlantic, "	40,000,000
Indian, "	20,000,000
Southern, "	10,000 000
Arctic, "	5 000 000

NOTE. The seas, bays, gulfs, etc., connected with each ocean, are included in the foregoing estimate. It may be proper to remark, however, that the exact superficial extent of the several oceans is not known with certainty, nor the exact proportion of land and water.

Seas.	Length in Miles.
Mediterranean, about	2,000
Caribbean "	1,800
China "	1,700
Red "	1,400
Japan "	1,000
Black "	932
Caspian "	640
Baltic "	600
Okhotsk "	600
White "	450
Aral "	250

Bays.	Length in Miles.
Hudson's, about	1,200
Baffin's "	600
Chesapeake "	250

Lakes.	Length. Miles.	Width. Miles.
Superior	380	120
Baikal	360	35
Michigan	330	60
Great Slave	300	45
Huron	250	90
Winnipeg	240	40
Erie	270	50
Athabasca	200	20
Ontario	180	40
Maracaybo	150	60
Great Bear	150	40
Ladoga	125	75
Champlain	123	12
Nicaragua	120	40
L. of the Woods	70	25
Geneva	50	10
Constance	45	10
Cayuga	36	4
George	36	3

AGES OF ANIMALS.

Periods of Gestation and Incubation

Animals and Birds.	Age to which they live.	Period of Gestation and Incuba'n
Elephant	100	23 mo's
Camel	100	12 "
Swan	100	1½ "
Raven	100	¾ "
Crow	100	¾ "
Parrot	100	1½ "
Goose	80	1 "
Lion	70	5 "
Horse	30	11 "
Cow	20	9 "
Swine	20	4 "
Wolf	20	3 "
Peafowl	20	1 "
Pigeon	20	½ "
Cat	15	2 "
Fox	15	2 "
Dog	14	2 "
Sheep	10	5 "
Hen	10	¾ "
Canary	10	½ "
Rabbit	7	¾ "

Dates of English Translations of the Bible.

Translation.	Date.
Saxon Translation of the Psalms	709
Saxon Translation of the Gospel	721
Bede's Translation of the entire Bible	725
English Translation	1290
Tyndale's New Testament	1526
Tyndale's Pentateuch	1530
The Great, or Cromwell Bible	1539
Cranmer's Edition of the Great Bible	1540
Geneva Bible	1560
Parker's, or the Bishops' Bible	1568
The Gospels in Saxon and English	1571
Genevan Bible	1576
First Roman Catholic Bible in England	1609
The Royal, or King James' Bible	1611
The "Wicked" Bible	1632
Walton's Polyglott Bible	1657
Wyckliffe's Bible (first published as a whole)	1850
American Bible Union Translation (Baptist)	1869
The "Speaker's Commentary"	1878
Anglo-Saxon Edition, New Testament	1881
Anglo-Saxon Edition, Old Testament	1881

Principal Exports of Various Countries.

ARABIA—Coffeé. aloes, myrrh, frankincense, gum arabic.
BELGIUM—Grain, flax, hops, woolens, linens, laces, various manufactures.
BRAZIL—Cotton, sugar, coffee, tobacco, gold, diamonds, wheat, dye-woods.
CANADA, NOVA SCOTIA and NEW BRUNSWICK—Flour, furs, lumber, fish.
CAPE COLONY—Brandy, wine, ostrich feathers, hides, tallow.
CENTRAL AMERICA—Logwood, mahogany, indigo, cocoa.
CHILI—Silver, gold, copper, wheat, hemp, hides, sugar, cotton, fruits.
CHINA—Tea, silks, nankeens, porcelain, opium, articles of ivory and pearl.
DENMARK—Grain, horses, cattle, beef, pork, butter, and cheese.
EASTERN, WESTERN and SOUTHERN AFRICA—Gold, ivory, ostrich feathers.
EGYPT—Rice, grain, linseed, fruits, indigo, cotton, sugar.
ECUADOR and NEW GRENADA—Coffee, cotton, indigo, fruits, sugar, cocoa.
FRANCE—Silks, woolens, linens, cottons, wine, brandy, porcelain, toys.
GERMANY—Linen, grain, various manufactures of silver, copper, etc.
GREAT BRITAIN—Woolens, cottons, linens, hardware, porcelain, etc.
GREENLAND—Whale oil, whale bone, seal skins.
HINDOSTAN—Cotton, silks, rice, sugar, coffee, opium, indigo.
HOLLAND—Fine linens, woolens, butter, cheese, various manufactures.
ITALY—Silks, wines, grain, oil, fruits.
IRELAND—Linens, beef, butter, tallow, hides, potatoes, barley, etc.
JAPAN—Silk and cotton goods, Japanware, porcelain.
MEXICO—Gold, silver, logwood, cochineal, fruits.
PERSIA—Carpets, shawls, wine, silk, cotton, rice, rhubarb, guns, swords, etc.
PERU—Silver, gold, Peruvian bark, mercury, sugar, cotton, fruits.
RUSSIA—Hemp, iron, linen, grain, timber, furs, tallow, platina.
SPAIN and PORTUGAL—Silks, wool, wine, oil, fruits, salt, etc.
SWEDEN and NORWAY—Iron, steel, copper, timber, fish.
SWITZERLAND—Watches, jewelry, paper, laces, linen, cotton and silk goods, et
TURKEY—Grain, fruits, cotton, oil, wines, carpets, muslin, swords.

Area and Population of the Earth.

Divisions.	Area in Sq. Miles.	Population.	Pop. to Sq. Mile.
America	15,258,686	100,415,400	6.6
Europe	3,700,000	327,743,400	88.6
Asia	16,770,000	795,591,000	47.4
Africa	12,000,000	205,823,200	17.1
Australasia	3,156,841	2,862,103	
Other Countries		1,452,897	
Total	50,885,527	1,433,887,500	28.1

All these collectively are estimated to speak more than 3,000 languages.

The amount of deaths per annum is 33,333,333, or 91,954 per day, 3,730 per hour, 60 per minute, or 1 per second. It is estimated that the population of the earth, at the present time, is being increased at the rate of about 16,500,000 annually.

The average duration of life throughout the globe is 33 years. One-fourth of its population dies before the seventh year, and the half before the seventeenth. Out of 10,000 persons only one reaches his hundredth year, only one in 500 his eightieth; and only one in 100 his sixtieth.

Another estimate of the earth's population is as follows:

Races.	
Whites	600,000,000
Mongolians	600,000,000
Blacks	250,000,000
Copper Colored	12,000,000

Religions.	
Pagans	810,600,000
Christians	388,000,000
Mohammedans	201,000,000
Jews	7,000,000
All Infidels (Est.)	93,357,500

The Christians are divided as follows:

Church of Rome.	Protestants.	East and Greek Church.
201,000,000.	106,000,000.	81,000,000.

Religion and its Founders.

Beliefs Concerning a Future Existence.

DEVOTION is a characteristic of the human mind, distinguishing man from the lower animal creation.

There exists in the higher understanding a belief that this earth-life is not all—that there is a state of being beyond this, and that death is but the portal through which the soul passes to the other sphere of existence, when the spirit can no longer remain in its habitation on earth.

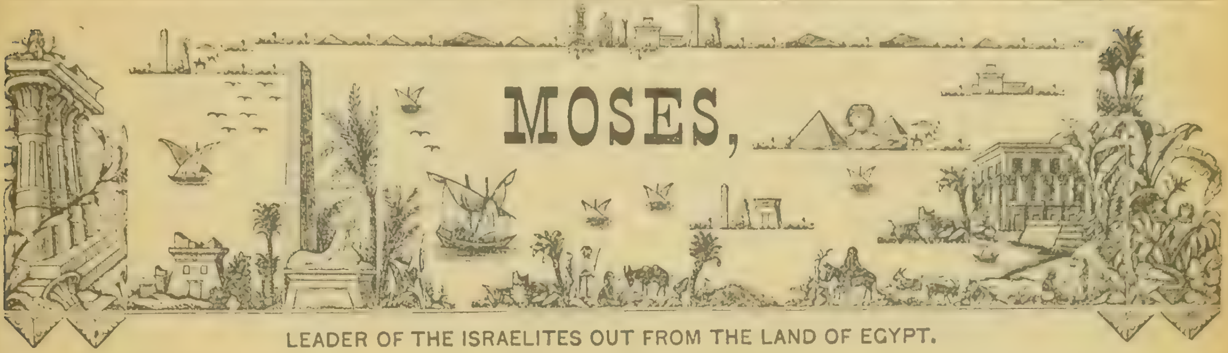
What the condition is in spirit-life is a matter of conjecture. That it is a place where the extreme of torment is meted out to those who have done evil on earth is the opinion of some. That it is a haven of rest, whatever may have been the faults here, is the belief of others.

As the decades go by, it is seen, opinions are constantly changing concerning the future life, the disposition being, as the mind becomes enlightened, to take broader views in regard to the greatness and grandeur of the Supreme, the belief gradually fastening itself in the mind that death is another birth, ushering the soul into a future existence, that will be happy in proportion to the good deeds done and the life well-lived on earth.

Among all peoples the idea prevails, also, that there is a Creator—a Governor of the great universe. and that through prayer the mind may come into a communion with the Supreme and be ennobled and exalted thereby. So thoroughly is this fact fixed in the human belief, through the organs of veneration and spirituality, as to cause the inhabitants in every part of the world instinctively to worship.

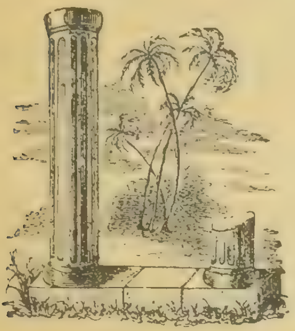
Numerous are the forms by which the people of different countries engage in their devotions. It is a conceded fact, however, among the most highly civilized, that as the spirituality in the nature needs cultivation, it can best be obtained by having stated times of worship in places set apart for it, the ceremony being conducted by those who are, by mental endowment and spiritual nature, fitted to lead and instruct.

What have been the phases of religious belief at various periods, is shown in the life-work of the different religious founders whose histories are found on succeeding pages.



MOSES,

LEADER OF THE ISRAELITES OUT FROM THE LAND OF EGYPT.



LONELY ruins and desolate wastes mark the seat of a former civilization in many portions of Egypt. Here flourished science and here was fostered art, thousands of years back in the history of a race, the evidence of whose greatness is shown in the relics of beautiful sculpture and grand architecture that lie scattered over the country.

Throughout Southern Asia and Egypt the various systems of religion took root earliest in the history of mankind. Here lived and taught Confucius, in China; here Brahma and Buddha established their codes of worship in India; here Zoroaster proclaimed his religion in Persia. Here Mohammed grew to power and made the Koran the revealed religion in Arabia. Across from Arabia, in Egypt, on the banks of the Red Sea, Moses became a great religious leader, and near by was the birth-place of Jesus, whose spiritual teaching and example laid the foundation for that grand system of Christianity which has been the guide and beacon light of the highest civilization in the last eighteen centuries.

The first mention, according to the best chronological data, of religious worship, dates back to a period 3,875 years before Christ, when Cain and Abel were offering their sacrifices on the altar, Cain having brought of the fruits of the ground, and Abel of the firstlings of his flock. The writer who made record of the fact was Moses, who is supposed to have written the first five books of the Old Testament, and was the founder of the Jewish religion.

Moses.

In the tribe of Levi were a husband and wife known as Amram and Jochabed. To them a child was born, at a time when, for certain reasons, the King of Egypt had commanded the death of every new-born male Israelite. To save her child from death, the mother made a basket that floated like a small boat, in which she placed her infant at a point by the side of the river Nile where she knew the daughter of Pharaoh was in the habit of bathing. In the meantime she secreted her daughter in the reeds near by, to watch the result. As had been anticipated, the princess discovered the child, and being impressed with its beauty, she resolved to adopt it. The sister of the infant, who was near at hand, offered to find a nurse for the child, which met the favor of the princess, and thereupon she brought the mother, who, in the capacity of nurse, became an inmate of the palace, where the child was named Moses. In the court of the King he was educated in a most liberal manner.

When about forty years of age he killed an Egyptian officer, whom he saw ill-treating an Israelite; for which offense, in order to save himself, Moses fled into Arabia, where he married the daughter of a priest, settled in Midian, and for forty years followed the pursuit of a shepherd near Mount Sinai.

During his long residence in Arabia, the condition of the descendants of Abraham, Isaac and Jacob, known as Israelites, in Egypt, became deplorable, through persecutions of various kinds. According to the Biblical account (from which we condense this biography), God appeared to Moses in a burning bush, one day as he cared for his flocks, and commissioned him to return to Egypt and announce himself as authorized to conduct the Israelites from the land where they were enduring so many persecutions into Canaan, a region of the country bordering upon the Mediterranean Sea.

That the people whom Moses proposed to deliver might have no doubt as to his divine authority, the Lord permitted him to perform various miracles in the presence of the people. Of these is related the changing of a rod to a serpent, and from a serpent to a rod again; the making his hand leprous, and instantly restoring it to health; the drawing of water from a rock by smiting it, and the turning of water into blood.

The people were thus made to believe in his power and capacity for leadership of the emigrants, of whom there were 600,000 men, beside women and children.

It is related that, aside from providing themselves with all the jewelry they could obtain, and various other kinds of personal effects, the Israelites took with them on their journey large droves of cattle, whereby food might be obtained; and yet, notwithstanding this provision, there was such scarcity as to make it necessary that the Lord provide manna and other food by which the people could be fed.

Another miraculous provision made for them was that of sending before them on their journey out of Egypt a cloud by day and a pillar of fire by night; while another was the opening of the Red Sea to let them pass through on dry land, and the coming together of the waters again after their passage, thus drowning the Egyptians, who were pursuing and intending to capture the Israelites, for the purpose of returning them to bondage.

Thus the followers of Moses escaped out of Egypt, but, owing to their many transgressions, they were prevented from entering the promised land until the offenders among them had died. Even Moses himself, from errors committed, was not allowed to enter it, but from Mount Pisgah he was permitted to see the land of Canaan.

Retaining his faculties undimmed to the last, Moses died when 120 years old, and was buried on the confines of Canaan, but at a point which is not known.

The Jewish Scriptures.

To Moses is attributed the writing of the first five books of the Bible. The history of the creation of the world, the expulsion of Adam and Eve from the Garden of Eden; the account of the flood; the building of the Tower of Babel: the calling of Abraham to become the founder of the Jewish nation; the destruction of Sodom and Gomorrah—these events of which Moses wrote occurred from fifteen to twenty-five hundred years before his own birth.

The progress of the history of the Israelites, which began by God calling Jacob Israel; the selling of Joseph into Egypt; the settlement of Jacob and his family in that country; the rapid increase of the Israelites and their enslavement by the Egyptian kings—these events, by his record, occurred at a much later date before his birth. The deliverance of this people from their bondage by God Himself; the receiving of the ten commandments on Mount Sinai; the wandering of the people forty years in the wilderness—these events he wrote of as occurring in his own time. To the writings of Moses the ancient priests added much oral law, legal provisions and traditions. The whole of this, collected into one volume, along with the five books written by Moses—being Genesis, Exodus, Leviticus, Numbers and Deuteronomy—became the Bible of the Jewish people, called the "Talmud."

What the Talmud Teaches.

To Moses and the Talmud was the Christian world first indebted for the idea of a Sabbath as a day of rest and spiritual improvement. By him and it was expounded the idea of one God, the Creator and Ruler over all things; and in it was taught the necessity of lifting the thought above the idol and worshiping the one God as a Supreme and All-Pervading Spirit. Unlike the teaching of Christ in its severity and in its advocacy of retaliation for sins committed, it aimed, nevertheless, in its code to befriend the poor and unfortunate, and to deal justly by those who observed and obeyed the laws.

EXTRACTS FROM THE TALMUD.

THE following are some of the commandments and teachings of the Mosaic law as found in the Talmud:

In a place where there are no eminent men, endeavor thou to become eminent.

Be of the disciples of Aaron, loving and pursuing peace; loving mankind and bringing them to the study of the law.

If I do not act for myself, who can do it for me? When I am alone by myself, what am I? If I act not now, when shall I?

If one has acquired a good name, he has acquired it for himself; if one has acquired a knowledge of the law, he has obtained immortal life.

He who attends much at school increaseth wisdom; he who increaseth in reflection increaseth in prudence; he who exerciseth much charity multiplieth peace.

He who increaseth his flesh multiplieth food for worms; he who multiplieth riches increaseth care; he who increaseth female servants increaseth lewdness; he who multiplieth men-servants increaseth robbery; but he who increaseth his knowledge of the law increaseth life.

He who is ambitious of magnifying his name destroyeth his name, and he who doth not increase his knowledge diminisheth it; and he who doth not study the law deserves death; and whosoever useth for himself the crown of the law will perish.

Separate not thyself from the congregation; nor have confidence in thyself until the day of thy death. Judge not thy neighbor until thou art placed in the same circumstances; neither utter anything which is incomprehensible, in the hope that it afterwards may be comprehended, nor say, When I shall have leisure I will study; for perhaps thou mayest never have the leisure.

Selections From the Old Testament Scriptures.

Law of Punishment.

He that smiteth a man so that he die shall be surely put to death.

He that smiteth his father or his mother shall be surely put to death.

He that stealeth a man and selleth him, or if he be found in his hand, he shall surely be put to death.

He that curseth his father or his mother shall surely be put to death.

Thou shalt give life for life, eye for eye, tooth for tooth, hand for hand, foot for foot, burning for burning, wound for wound, stripe for stripe.

If men strive together, and one smite another with a stone, or with his fist, and he die not, but keepeth his bed, if he rise again and walk abroad upon his staff, then shall he that smote him be quit; only he shall pay for the loss of his time, and shall cause him to be thoroughly healed.

Treatment of the Poor.

If thou lend money to any of my people that is poor by thee, thou shalt not be to him as a usurer, neither shalt thou lay upon him usury. If thou at all take thy neighbor's raiment to pledge, thou shalt deliver it unto him by that the sun goeth down; for that is his covering only, it is his raiment for his skin; wherein shall he sleep?

THE TEN COMMANDMENTS.

I.

I AM the Lord thy God, which have brought thee out of the land of Egypt, out of the house of bondage. Thou shalt have no other gods before me.

II.

Thou shalt not make unto thee any graven image, or any likeness of anything that is in heaven above, or that is in the earth beneath, or that is in the water under the earth; thou shalt not bow down thyself to them nor serve them; for I, the Lord thy God, am a jealous God, visiting the iniquity of the fathers upon the children unto the third and fourth generation of them that hate me, and shewing mercy unto thousands of them that love me and keep my commandments.

III.

Thou shalt not take the name of the Lord thy God in vain; for the Lord will not hold him guiltless that taketh his name in vain.

IV.

Remember the Sabbath-day to keep it holy. Six days shalt thou labor and do all thy work; but the seventh day is the Sabbath of the Lord thy God. In it thou shalt not do any work, thou, nor thy son, nor thy daughter, thy man-servant, nor thy maid-servant, nor thy cattle, nor thy stranger that is within thy gates; for in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day; wherefore the Lord blessed the seventh day and hallowed it.

V.

Honor thy father and thy mother; that thy days may be long upon the land which the Lord thy God giveth thee.

VI.

Thou shalt not kill.

VII.

Thou shalt not commit adultery.

VIII.

Thou shalt not steal.

IX.

Thou shalt not bear false witness against thy neighbor.

X.

Thou shalt not covet thy neighbor's house, thou shalt not covet thy neighbor's wife, nor his man-servant, nor his maid-servant, nor his ox, nor his ass, nor anything that is thy neighbor's.

Duty of Benevolence.

And if thy brother be waxen poor and fallen in decay with thee, then thou shalt relieve him; yea, though he be a stranger or a sojourner; that he may live with thee. Take thou no usury of him, or increase; but fear thy God, that thy brother may live with thee. Thou shalt not give him thy money upon usury, nor lend him thy victuals for increase.

At the end of every seven years thou shalt make a release. And this is the manner of the release: Every creditor that lendeth aught unto his neighbor shall release it; he shall not exact it of his neighbor, or of his brother, because it is called the Lord's release. Of a foreigner thou mayest exact it again, but that which is then with thy brother thine hand shall release, save when there are no poor among you.

Rewards of Kindness.

If there be among you a poor man of one of thy brethren within any of thy gates in thy land which the Lord thy God giveth thee, thou shalt not harden thine heart, nor shut thine hand from thy poor brother; but thou shalt open thine hand wide unto him, and shalt surely lend him sufficient for his need in that he wanteth. Thou shalt surely give him, and thine heart shall not be grieved when thou givest unto him, because for this thing the Lord thy God shall bless thee in all thy works and in all that thou puttest thine hand unto.

BUDDHA,
A Religious Teacher 640 Years Before Christ.

BUDDHA,

Founder of the Buddhistic Religion.

The Buddhistic and Brahmanistic Beliefs.

AT KAPILAVASTOU, the capital of Central India, Siddharta was born about 670 years before Christ. His father, Couddhodama, was the king of the realm, and his mother, Maya Devi, a very beautiful woman, was the daughter of king Sonprabuddha. Both father and mother of Siddharta were celebrated—the father for the wisdom of his government, and his mother for her exemplary life and piety.

His mother dying seven days after his birth, his guardianship was entrusted to a maternal aunt, by whom he was trained with care. As a student in school, he excelled in study, but was much disposed to be absorbed in meditation. Such is the account from ancient writings.

Having arrived at a suitable age, a maiden was selected for him to marry, named Gopa, but her father, Dandapani, withheld his consent to the marriage until Siddharta should demonstrate his worthiness by talents of a high order. He was compelled, therefore, to enter a contest with five hundred young men, in the various studies, games and exercises at that time esteemed in India. In this examination and exhibition, Siddharta came off victorious in scholastic exercises, knowledge of morals, philosophy, and games of bodily skill, through which fact Gopa became his wife.

Though happily situated, his mind turned constantly to religious meditation, and, feeling that he had a higher duty to perform, he finally left his father's palace, exchanged his garments for those befitting one more lowly and humble, and entered upon a study of Brahmanism, which dissenting from, he retired to the wilderness of Ourovilva, where he spent six years in austerity, fasting, meditation and prayer, for the purpose of solving the mysteries of life, sin, death, goodness and wisdom.

At the end of this period of meditation, he felt himself so enlightened as to be BUDDHA, the meaning of which is "Perfect Sage."

He was seated, at the time when he received his revelation, under a fig-tree, a place that afterwards became greatly celebrated, and was known as Bodhimanda, *i. e.* the "Seat of Intellect."

Hiover Thsang, a Chinese pilgrim, who visited this locality 632 years before Christ, found many monuments erected here, and seven days he spent in worshiping them.

Feeling the inspiration full upon him, Buddha, then thirty-six years of age, commenced his preaching, first in small places, and afterwards in the city of Benares.

In the succeeding forty years he traversed all Northern India, preaching his system, combating the Brahmans, and making many converts. He lived to see his doctrine generally accepted throughout India. He died when about eighty years of age, 543 years before Christ.

For 1,600 years the system of religion thus founded by Buddha retained its hold on the people of the country where it was first established, but in the eleventh and twelfth centuries, through much persecution, the last traces of the system disappeared in India. It spread, however, over nearly the whole of Eastern Asia, and became the popular religion of China, Japan, Siam, Anam, Assam, Nepaul, Ceylon, Thibet and the Burman Empire, having about 370,000,000 of believers, making the largest number of followers of any religion on earth.

Brahmanism and Buddhism.

Before the advent of Buddhism, Brahmanism had been the religion of India for many centuries, as it is to-day. It has never been traced to any individual as its founder, Brahma being only the name of one of the imaginary gods of the people from which the religion takes its name.

The book of Brahma was written by Menu, and from its pages is learned that the Brahmans believe in the transmigration of souls through various forms of animal life, perfect bliss or heaven being attained when we at last become unconscious.

What Buddhists Believe.

The doctrines of Buddha are based on the same principles of philosophy as those of Brahmanism. Both believe in transmigration and final unconsciousness.

Buddha differed, however, from Brahma, in the simplicity of his religious doctrine. He aimed to raise the people above idol worship, and his religion was largely instrumental in dispensing with much barbaric ceremony, bloodshed and superstition among the people of his time.

His object was to teach man to attain to a pure and holy life. He did not, therefore, seek to propagate his doctrines by the sword, but engrafted them upon the religious forms and habits already established, thus improving the condition of the people.

The Buddhist believes in no creation, but that matter is constantly undergoing change of form; that at death man is immediately born again, either in some animal, some condition in one of the lower hells, in some exalted human being, or in one of the upper heavens, according as his life has been good and worthy in the present existence.

Buddhistic Hells.

For the punishment of the wicked there are, in the Buddhistic belief, one hundred and thirty-six hells, situated in the interior of the earth. At death, the soul of the sinner will enter the form of a woman, a stone, an inanimate clod, some reptile, or it may pass to one of the many hells, which have varying degrees of punishment, the least time in which is ten million years.

The Buddhistic Heaven.

As a reward for goodness, at death the soul will enter the form of an exalted man, a blessed spirit, or may become a divinity in one of the many heavens, which have varying degrees of happiness in which the soul may remain for many billions of years.

While the ignorant Buddhist often worships Buddha himself as an idol, it was not the design of Buddha that he should be so worshiped. The doctrine makes nothing to worship but a good life. It has no recognition of God, no belief in, and no expectation of, immortality. Heaven is attained, according to the doctrine, when man, having passed through the various forms and conditions assigned him, is at last allowed to rest in an unconscious state.

Teachings and Precepts of Buddha.

THOU shalt not lie.

Thou shalt not hate.

Thou shalt not calumniate.

Thou shalt not speak of injuries.

Thou shalt not infringe the laws of chastity.

Thou shalt not kill even the smallest creature.

Thou shalt not excite quarrels by repeating the words of others.

Thou shalt not appropriate to thyself what belongs to another.

As rain breaks through an ill-thatched house, passion will break through an unreflecting mind.

Cut out the love of self like an autumn lotos with thy hand. Cherish the love of peace.

As a solid rock is not shaken by the wind, wise people falter not amidst praise or blame.

There is no fire like passion, no shark like hatred, no snare like folly, no torrent like greed.

He whose evil deeds are covered by good deeds brightens up this world like the moon freed from clouds.

If a man commits a sin, let him not do it again; let him not delight in sin; pain is the outcome of evil.

If a man does what is good, let him do it again; let him delight in it; happiness is the outcome of good.

If a man has transgressed one law and spoken lies, and scoffs at another world, there is no evil he will not do.

Let a man overcome anger with love; let him overcome evil with good; let him overcome the greedy by liberality and the liar by truth.

He who holds back rising anger like a rolling chariot, him I call a real driver; other people are but holding the reins.

The sages who injure nobody, and who always control their bodies, will go to the unchangeable place, where they will suffer no more.

As the bee collects nectar and departs without injuring the flower, or its color or fragrance, so let the sage dwell on earth.

The virtuous man delights in this world, and he delights in the next. He delights, he rejoices, when he sees the purity of his own work.

The evil-doer suffers in this world, and he suffers in the next. He suffers when he thinks of the evil he has done. He suffers more when going in the evil path.

Reflection is the path to immortality; thoughtlessness the path to death. Those who reflect do not die; those who are thoughtless are as if dead already.

Let no man think lightly of evil, saying in his heart it will not come over me. Even by the falling of water-drops a water-pot is filled; the fool becomes full of evil, even if he gathers it little by little.

Let no man think lightly of good, saying in his heart, it will not benefit me. Even by the falling of water-drops a water-pot is filled; the wise man becomes full of good, even if he gathers it little by little.

Better than sovereignty, better than going to heaven, better than lordship over all worlds, is the reward of the first step in holiness.

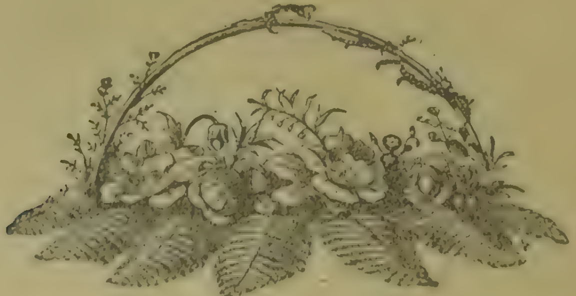
Like a beautiful flower, full of color, but without perfume, are the fine but fruitless words of him who does not act accordingly; but like a beautiful flower, full of color and full of perfume, are the fruitful words of him who acts accordingly.

Not to commit any sin, to do good and to purify one's mind, that is the teaching of the Awakened. Not to blame, not to strike; to live restrained under the law; to be moderate in eating, and to dwell on the highest thoughts, this is the teaching of the Awakened.

Not in the sky, not in the midst of the sea, not if we enter into the clefts of the mountains, is there known a spot in the whole world when a man might be freed from an evil deed. Not nakedness, not plaited hair, not diet, not fasting, not lying on the earth, not rubbing with dust, nor sitting motionless, can purify a mortal who has not overcome desires.

All that we are is the result of what we have thought; it is founded on our thoughts, it is made up of our thoughts. If a man speaks or acts with an evil thought, pain follows him as the wheel follows the foot of him who draws the carriage. If a man speaks or acts with a pure thought, happiness follows him like a shadow that never leaves him. Let the wise man guard his thoughts, for they are difficult to perceive, very artful and rush wherever they list.

If one man conquer in battle a thousand times a thousand men, and if another conquer himself, he is the greatest of conquerors. One's own self conquered is better than all other people; not even a God could change into defeat the victory of a man who has vanquished himself and always lives under restraint. By one's self the evil is done, by one's self one suffers, by one's self evil is left undone, by one's self one is purified. Purity and impurity belong to one's self; no one can purify another.



CONFUCIUS,

Sage, and Principal Author of the Chinese Moral Law.

THE READER who has studied the Chinese character has doubtless been impressed with the fact that through every vicissitude, in whatever part of the world he may be, thousands of miles from his native home, the Chinaman will, as far as possible, conform to the habits and customs of his ancestors. However fashionable the dress of the people around him, he is happiest in his loose blouse. Whatever may be the style for the boot or shoe, he is best satisfied with his thick-soled slipper; and however differently the men of other races may dress their hair, nothing but the most stern necessity will cause him to change the style in which the hair has been worn for hundreds of years in his own country.

Seldom disposed to originate, but quick and apt as an imitator, he readily adapts himself to circumstances, and through his frugality and industry is usually above the necessity of beggary or want.

A study of Confucius and his teachings reveals the fact that the distinctive characteristics of the Chinaman are the results of his religious training.

The Bible of the Chinese is the writings of Confucius. For over two thousand years they have been the supreme law to many millions of the Chinese race, who gathered their spiritual strength and regulated their daily walk by their precepts and instructions. Notwithstanding that no claim is made that he was aided by Divine assistance or supernatural power, few religions have exerted so great an influence.

TEMPLE OF CONFUCIUS.
By the Grave.

The sage Confucius, according to the records of the Chinese historians, was born five hundred and fifty-one years before Christ, and was a direct descendant of an emperor who reigned over China two thousand years before his birth. His father dying when he was three years of age, his guardianship and instruction devolved upon his mother, who, devoting her best efforts to his care, was rewarded by the utmost filial piety on the part of the son, a virtue which the Chinese regard among the foremost of the principles of goodness.

Sent to the public school when seven years of age, he so quickly excelled his comrades in his studies as to greatly honor his teacher, who soon advanced him to the position of assistant. At this young age, the historians tell us, he avoided the noisy sports of his companions, and devoted himself to the study of religious rules, which precepts he earnestly endeavored to follow.

He was appointed to public service when seventeen years of age, but resigned to mourn the death of his mother, which occurred in his twenty-fourth year.

Having conveyed her remains to the summit of a mountain where was the grave of his father, he went into retirement for three years, his only relief being the study of philosophy.

Becoming, in the meantime, acquainted with the precepts of the sages that had lived before his day, and being desirous of teaching, he entered upon this work at the age of thirty. To increase his knowledge he visited neighboring countries, preaching wherever he went.

Returning to China, he was called in his fiftieth year to the position of Prime Minister, an office which the intrigues of a neighboring prince soon compelled him to resign. He retired then to private life, and devoted the remainder of his years to the recording of his own thoughts, besides collecting the wisdom of others for the benefit of future generations.

On one of his journeys abroad, for the purpose of making new researches, news came of the death of his wife, which overwhelmed him with grief. Returning to his home, he announced to his disciples that the days of his life were numbered, and that the utmost haste would be necessary to enable him to finish his work.

Upon the completion of his writings, which comprise four books on governmental and moral law, one only of which is claimed as his own, the other three containing the law of seers before him, he placed them on an altar and rendered thanks that his life had been spared until he could complete his labors. He subsequently, realizing that his death was rapidly approaching, designated the duty that he thought each of his disciples should perform, and soon after died, at the age of seventy-two, honored and mourned by an immense number of people.

In 1671 it was estimated that there were 11,000 males of his direct descendants in China bearing his name, Kung-fu-tse, from which the name Confucius is taken.

In the city of Kiofoohien, which contains his tomb, four-fifths of the inhabitants are his descendants.

The most magnificent temple in the Empire stands on the site of his residence, and the fact that 370,000,000 of people, or about one-fourth of the inhabitants on the face of the earth, are governed socially and politically by the laws which he transmitted to posterity, would make him one of the most successful founders of religion that ever lived.

A Religion that Makes Imitators, not Originals.

The religion of Confucius was a religion of the past. While it is admired for its teachings of filial love, for its gentleness and its high appreciation of goodness and truth, it so thoroughly enforced the duty of obedience to those in authority as to make its followers a race of imitators, instead of a progressive people. The precepts of the religion continually admonish the people to admire the sages of the past, to imitate their example and to do as they have done. The result is that the people of China have steadily, for the past two thousand years, looked back upon that which had gone before. As a people, they have simply imitated, have stood still and made no advancement. In art, science, agriculture and literature China stands where she stood hundreds of years ago.

While Confucius evidently acknowledges a God, his religion makes no mention of the Supreme, but relates principally to the importance of a moral and a correct life.

The Chinaman is a reflex of the religion of Confucius. Imitative and obedient, he is disposed to respect the laws and obey those in authority. Fully impressed with the idea that his ancestors were possessed of the best information, he adopts the habits of other countries with great reluctance, and being thoroughly imbued with filial respect and love, he longs to have his final resting-place beside the graves of his parents, which privilege Confucius proclaimed as a reward for well-doing. It is not strange, therefore, that the last dying request of the Chinaman should be to be transported to his native country, where he may rest beside his friends and relatives in the family burying-ground. A variety of religious beliefs prevails throughout China. Some believe in the transmigration of souls; many believe in a future heaven and hell; some accept Christ, and many regard Mohammed as the prophet.

Precepts from the Chinese Sacred Books.

THE following are maxims of Confucius, taken from the writings in his sacred books.

If you err, fear not to reform.

Have not a friend morally inferior to yourself.

Have faithfulness and sincerity as first principles.

Not to correct our faults is to commit new ones.

When you have faults, do not fear to abandon them.

To know that a thing is right and not to do it, is weakness.

When you have learned to live well, you will know how to die well.

Return bad treatment with equity, and recompense kindness with kindness.

Be rigid to yourself and gentle to others, and you will have no enemies.

Riches and honors acquired by unrighteousness are, to me, as a floating cloud.

He who persecutes a good man makes war against himself and all mankind.

The love of the perfect man is a universal love; a love whose object is all mankind.

Give thy superfluities to the poor. Poverty and human miseries are evils, but the bad only resent them.

It is not enough to know virtue; it is necessary to love it—but it is not sufficient to love it; it is necessary to possess it.

Fix thy thoughts on duty; practice without ceasing the virtue of humanity, and if you have leisure, cultivate the arts.

It is necessary, after an exact and extensive manner, to know the causes, properties, differences and effects of all things.

The nature of man is upright. If in the course of his life he loses his natural uprightness, he removes far from him all happiness.

It is impossible that he who knows not how to govern and reform himself and his family can rightly govern and reform a people.

Labor to purify thy thoughts; if thy thoughts are not ill, neither will thy actions be so. The wise man has an infinity of pleasures.

He who exercises government by means of his virtue may be compared to the north polar-star, which keeps its place, and all the stars turn toward it.

Things that are done it is needless to speak about; things that have had their course it is needless to remonstrate about; things that are just it is needless to blame.

The good man employs himself only with virtue; the bad only with his riches. The first continually thinks upon the good and interest of the state; but the last thinks on what concerns himself.

Endeavor to imitate the wise, and never discourage thyself, how laborious soever it may be; if thou canst arrive at thine end, the happiness thou wilt possess will recompense all thy pain.

If a person has deviated from the path of integrity and innocence, he needs only to excite the good that remains to make atonement by pains and industry, and he will infallibly arrive at the highest state of virtue.

It is necessary to meditate, in particular, on the things we believe we know, and to weigh everything by the weight of reason, with all the attentiveness of spirits, and with the utmost exactness whereof we are capable.

It is the wise man only who is always pleased; virtue renders his spirit quiet, nothing troubles him, nothing disquiets him, because he practices not virtue as a reward; the practice of virtue is the sole recompense he expects.

When the opportunity of doing a reasonable thing shall offer, make use of it without hesitation. If a man, although full of self-love, endeavors to perform good actions, behold him already very near that universal love which urges him to do good to all.

The defects of parents ought not to be imputed to their children. If a father, by his crimes, render himself unworthy of being promoted to honor, the son ought not to be excluded, if he do not render himself unworthy. If a man shall be of obscure birth, his birth ought not to be his crimes.

Do unto another what you would he should do unto you, and do not unto another what you would not should be done unto you. Thou only needest this law alone; it is the foundation and principle of all the rest. We cannot observe the necessary rules of life, if there be wanting these three virtues: (1) Wisdom, which makes us discern good from evil. (2) Universal love, which makes us love all men who are virtuous. (3) That resolution which makes us constantly persevere in the adherence to good, and aversion for evil.

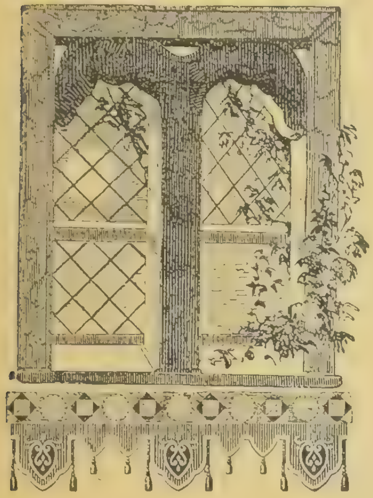
Always remember that thou art a man, that human nature is frail, and that thou mayest easily fall. But, if happening to forget what thou art, thou chancest to fall, be not discouraged; remember that thou mayest rise again; that it is in thy power to break the bands which join thee to thy offense, and to subdue the obstacles which hinder thee from walking in the paths of virtue. The wise man never hastens, either in his studies or his words; he is sometimes, as it were, mute, but when it concerns him to act and practice virtue, he, as I may say, precipitates all.

He who in his studies wholly applies himself to labor and exercise, and neglects meditation, loses his time; and he who only applies himself to meditation and neglects experimental exercise, does only wander and lose himself. The first can never know anything exactly, and the last will only pursue shadows. To the mind virtue communicates inexpressible beauties and perfections; to the body it produces delightful sensations; it affords a certain physiognomy, certain transports, certain ways, which infinitely please. And as it is the property of virtue to becalm the heart, and keep the peace there, so this inward tranquillity and secret joy produces a certain serenity in the countenance; a certain air of goodness, kindness and reason, which attracts the esteem of the whole world.

There are four rules according to which a perfect man ought to square himself. (1) He ought to practice, in respect of his father, what he requires from his son. (2) In the service of the state he ought to show the same fidelity which he demands of those who are under him. (3) He must act, in respect to his elder brother, after the same manner he would that his younger brother should act toward himself. (4) He ought to behave himself toward his friends as he desires his friends should carry themselves toward him. The perfect man continually acquits himself of these duties, how common soever they may appear. If you undertake an affair for another, manage and follow it with the same eagerness and fidelity as if it were your own. Always behave yourself with the same precaution and discretion as you would do if you were observed by ten eyes and pointed out by so many hands.

Zoroaster.

The Sun Worshipers of Persia and their Religion.



THE traveler who may sojourn for any time in some of the Asiatic cities is interested as he retires near the close of day from the busy thoroughfares to the seaside, or to some elevation, in witnessing the worship of the declining sun by the Parsees, a remnant of a once great religious body whose Bible is the Zend Avesta, the author of which was Zoroaster.

The exact date at which this personage lived is not known. Some authorities place the time of his birth at a period about 400 years before Christ. Others date it back to a period before Moses.

According to tradition, a good spirit appeared to his mother, who lived in Bokhara, in Southern Turkey, just before his birth, and assured her that she should be protected from the evil spirits that were seeking to destroy her child; that he would be a prophet. and the world was waiting for him. Recorded accounts make his father to have been Pourushaspa. and that the child lived. grew to manhood, and preached under the favor of King Gushtasp, who accepted and favored the general adoption of his doctrines.

The Zend Avesta, which contains the revealed religion of his followers, represents him as possessed of supernatural endowments, and as receiving from the Supreme Divinity. by personal interview, the truths which his religion teaches.

From Turkey his influence extended southward until it overspread all Persia, and extended largely into other portions of Asia. Its former influence and strength is shown in the remnants of ancient ruins of temples dedicated to worship. like those of Persepolis in Southern Persia and others.

The disciples of Zoroaster believe that as time never had a beginning, it will consequently have no ending; that eternity can be neither created nor destroyed, but it can create and destroy everything, and consequently may be considered the first great cause or creator.

They believe that originally there were two spirits—good and evil—typified by light and darkness; that the good spirit, God, evolved from the purest light, resides beyond the sun; that the bad spirit, the Devil, was evolved from darkness, is the embodiment of evil, and resides in hell. That these two spirits have always been and wil continue to be engaged in a strife for mastery, until light prevails. That God, whom they call Oromasdez. created six other gods to assist him, whose attributes are Benevolence. Wisdom. Truth. Beauty, Order and Health. That the god of darkness created six other gods of opposite attributes to aid him in counteracting the influence of goodness. Their belief is further explained elsewhere.

TEACHINGS OF ZOROASTER.

Treat old age with great respect and tenderness.

Be very scrupulous to observe the truth in all things.

The parental mind hath sown symbols through the world.

To refuse hospitality and not to succor the poor are sins.

Multiply domestic animals, nourish them, and treat them gently.

Cultivate the soil, drain marshes and destroy dangerous creatures.

There is no greater crime than to buy grain and keep it until it becomes dear.

All good thoughts, words and actions are the productions of the celestial world.

There is something intelligible which it behooves thee to apprehend with the flower of the mind.

The soul is a bright fire, and by the power of the Father remains immortal, and is mistress of life.

Avoid everything calculated to injure others. Have no companionship with a man who injures his neighbor.

He who sows the ground with diligence acquires a greater stock of religious merit than he could gain by ten thousand prayers in idleness.

Be not envious, avaricious, proud. or vain. Envy and jealousy are the work of evil spirits. Haughty thoughts and thirst for gold are sins.

Every man who is pure in thoughts, words and actions will go to celestial regions. Every man who is evil in thoughts, words or actions will go to the place of the wicked.

Do not allow thyself to be carried away by anger. Angry words and scornful looks are sins. To strike a man, or vex him with words, is a sin. Even the intention to strike another merits punishment. Opposition to peace is a sin. Reply to thine enemy with gentleness.

Fornication and immodest looks are sins. Avoid licentiousness, because it is one of the readiest means to give evil spirits power over body and soul. Strive, therefore, to keep pure in body and mind and thus prevent the entrance of evil spirits, who are always trying to gain possession of man. To think evil is a sin.

Contend constantly against evil, morally and physically, internally and externally. Strive in every way to diminish the power of Arimanes, the evil one, and destroy his works. If a man has done this he may fearlessly meet death, well assured that radiant Izeds will lead him across the luminous bridge into a paradise of eternal happiness. But though he has been brave in battle, killed wild beasts and fought with all manner of external evils, if he has neglected to combat evil within himself, he has reason to fear that Arimanes and his Devs will seize him and carry him to Duzakh, where he will be punished according to his sins; not to satisfy the vengeance of Ormudz, but because having connected himself with evil, this is the only means of becoming purified therefrom, so as to be capable of enjoying happiness at a future period.

JESUS THE CHRIST.

Bible Account of His Life and Teachings.

THE founder of the Christian religion, Jesus Christ, was born in Bethlehem, in Judea, a region of the country bordering on the East of the Mediterranean Sea, in the year of the world 4004. His mother, Mary, according to Biblical narrative, was betrothed to a carpenter named Joseph, when it was announced to her through an angel: "The Holy Ghost shall come upon thee, and the power of the Highest shall overshadow thee." The Bible description says further: "She was found with child of the Holy Ghost;" and further, that her husband "knew her not until she had brought forth her first-born son," who was named Jesus. Joseph and Mary, who resided at Nazareth, were stopping temporarily at an inn at Bethlehem, which being full at the time of his birth, the child was wrapped in swaddling clothes and laid in a manger.

JESUS,
Teacher of forgiveness and love, and founder of the Christian Religion.

Shepherds tending their flocks at night had the fact of his birth revealed to them by an angel, and they went to Bethlehem to see the child, and three wise men from the East, guided by a star, also came, and fell down and worshiped him.

Being circumcised on the eighth day, he was brought to the temple in Jerusalem at the expiration of thirty-three days.

King Herod, at that time being in Judea, hearing of the birth of Jesus, and fearing the loss of his throne from the predictions given of the child, sent a band of robbers to slay all the male children to be found in and about Bethlehem under two years of age, but, being warned by a dream, the parents of Jesus fled into Egypt, where they remained until Herod's death, when they returned to Nazareth, in Palestine, seventy-five miles north of Jerusalem.

Not much is known of him until he was twelve years of age, when his parents took him to the annual feast of the Passover at Jerusalem, where he astonished the doctors of law by the wisdom of his questions and answers at that time

Of his life from that period until his thirtieth year nothing is known. It is supposed, however, that he assisted Joseph as a carpenter, improving such opportunity as was presented for reflection and meditation. About six months previous to the commencement of his ministry, John the Baptist, a cousin of Jesus, proclaimed the coming of Jesus as the promised Messiah, and besought the people to repent of their sins and accept him. Many repented and were baptized, thus preparing themselves to be his followers. Jesus came soon after and was baptized, at his own request, in the river Jordan. It is said that as he came out from the water, a voice from heaven proclaimed: "This is My beloved Son, in whom I am well pleased."

Then followed a fast of forty days in the wilderness; after which he selected his disciples and commenced his preaching. His ministry was remarkable for the many miracles which it is recorded he performed. He cured by a word a nobleman's son lying sick at Capernaum. He changed water to wine to supply the guests at a marriage feast in Galilee. He stilled a tempest on the Sea of Galilee; healed a palsied centurion; raised Lazarus from the dead at Bethany; restored to sight blind Bartimeus; blighted with a word a barren fig-tree, and fed 5,000 persons with five loaves and two small fishes.

He delivered the memorable Sermon on the Mount, and gave the Lord's Prayer as an example to those who are disposed to indulge in long prayers. He drew upon himself the hostility of the Pharisees for healing the sick at the pool of Bethesda on the Sabbath, and gave offense to the Jews for gathering food also on that day. For these offenses, the overturning of the forms and ceremonies of the Jews, and the hostility aroused because he claimed to possess divine power, the scribes and Pharisees commenced a system of persecution, which finally ended in his death.

At the last feast of the Passover he instituted the Lord's Supper, and at that time announced that one of his disciples would betray him. Afterwards, in the garden of Gethsemane, he prayed with great agony of spirit, and hither came an armed band, with Judas, one of his disciples, who made Jesus known by kissing him. Refusing all offers of assistance, Jesus surrendered himself, and was brought to the court of seventy—the Jewish Sanhedrim—where he was accused before Pontius Pilate. the governor, of blasphemy in claiming to be the Son of God—a fact which Jesus not denying, he was condemned to death, though of any crime Pilate admitted him to be entirely innocent.

With a crown of thorns placed upon his head, he was led to Calvary, outside of Jerusalem, where he was ignominiously crucified between two thieves, among his last words being, when suffering the agony of death on the cross, that tender and compassionate expression—a sentiment that will live and elevate the races in all the years to come: "FATHER, FORGIVE THEM, FOR THEY KNOW NOT WHAT THEY DO!"

At his death, the Bible narrative says, the sun was darkened, the earth quaked, and the veil of the temple was rent in twain. Joseph, one of his disciples, came in the evening and obtained permission to bury his body in a tomb "hewn in stone," from which grave Jesus emerged alive on the third day, made himself known to his followers, remained on earth forty days, giving blessings and instructions, and promising to be with those who should believe.

Taking with him his disciples, he then retired to the Mount of Olives, where, in the act of spreading his hands and blessing them, he was taken up into heaven, and a cloud received him out of their sight.

The Influence of the Christian Religion.

Much controversy has existed since the appearance of Christ, as to his miraculous conception, his subversion of the laws of nature to perform miracles, and his alleged divinity. Into that discussion we do not purpose now to enter. It is sufficiently shown, however, by Bible history, that in daily walk, example and precept, Christ was the purest and noblest character that ever appeared on earth.

His teaching moulded and fixed in the human mind an idea of an Omnipresent, All-wise and Supreme Creator, elevating his followers above idol-worship. He inculcated the law of charity and forgiveness as no one else had done, and, by his disregard of past observances and forms, he ushered in a progressive, advancing theology, which has been, and is, the religion of civilization.

NAZARETH,

In Palestine. Childhood Home of Jesus. The place is called to-day Nasirah, and has about 3,000 inhabitants.

Extracts from the New Testament.

GIVE to him that asketh thee, and from him that would borrow of thee turn not thou away.—Matthew v., 42.

Let your light so shine before men that they may see your good works and glorify your Father which is in heaven.—Matthew v., 16.

He that receiveth you (the disciples) receiveth Me; and he that receiveth Me receiveth Him that sent Me.—Matthew x., 40.

Whosoever shall give to drink unto one of these little ones (the disciples) a cup of cold water only in the name of a disciple, verily I say unto you he shall not lose his reward.—Matthew x., 42.

God sent not His Son into the world to condemn the world, but that the world through Him might be saved.—John iii., 17.

For God so loved the world that He gave His only begotten Son that whosoever believeth in Him should not perish, but have everlasting life.—John iii., 16.

Ye have heard that it was said by them of old time, Thou shalt not commit adultery; but I say unto you, that whosoever looketh on a woman to lust after her hath committed adultery with her already in his heart.—Matthew v., 27, 28.

If ye forgive men their trespasses, your Heavenly Father will also forgive you; but if ye forgive not men their trespasses, neither will your Father forgive your trespasses.—Matthew vi., 14, 15.

Judge not that ye be not judged. For with what judgment ye judge ye shall be judged and with what measure ye mete, it shall be measured to you again.—Matthew vii., 1, 2.

Ask, and it shall be given you; seek and ye shall find; knock, and it shall be opened unto you; for every one that asketh receiveth, and he that seeketh findeth, and to him that knocketh it shall be opened.—Matthew vii., 7, 8.

If ye, being evil, know how to give good gifts unto your children, how much more shall your Father which is in heaven give good gifts to them that ask him! Therefore all things whatsoever ye would that men should do unto you, do ye even so to them; for this is the law and the prophets.—Matthew vii., 11, 12.

Enter ye in at the strait gate, for wide is the gate, and broad is the way, that leadeth to destruction, and many there be which go in thereat; because strait is the gate, and narrow is the way, which leadeth unto life, and few there be that find it.—Matthew vii., 13, 14.

Ye have heard that it hath been said, an eye for an eye, and a tooth for a tooth; but I say unto you that ye resist not evil, but whosoever shall smite thee on thy right cheek, turn to him the other also.—Matthew v., 38, 39.

The Lord's Prayer.

WHEN ye pray, use not vain repetitions, as the heathen do: for they think that they shall be heard for their much speaking.

Be not ye therefore like unto them; for your Father knoweth what things ye have need of, before ye ask Him.

After this manner therefore pray ye:

Our Father which art in heaven, hallowed be Thy name
Thy kingdom come. Thy will be done in earth, as it is in heaven.
Give us this day our daily bread.
And forgive us our debts, as we forgive our debtors.
And lead us not into temptation, but deliver us from evil: For thine is the kingdom, and the power, and the glory forever. Amen.—Matthew vi., 9.

Teaching and Precepts of Jesus.

TAKE heed that ye do not your alms before men, to be seen of them; otherwise ye have no reward of your Father which is in heaven. .....But when thou doest alms let not thy left hand know what thy right hand doeth, that thine alms may be in secret; and thy Father which seeth in secret shall reward thee openly.—Matthew vi., 1, 3, 4.

Every good tree bringeth forth good fruit, but a corrupt tree bringeth forth evil fruit. A good tree cannot bring forth evil fruit; neither can a corrupt tree bring forth good fruit. Every tree that bringeth forth not good fruit is hewn down and cast into the fire. Wherefore by their fruits ye shall know them.—Matthew vii., 17-20.

Whosoever shall confess Me before men him will I confess also before My Father which is in heaven; but whosoever shall deny Me before men, him will I also deny before My Father in heaven.—Matthew x., 32, 33.

Think not that I am come to destroy the law or the prophets; I am not come to destroy, but to fulfil. For verily I say unto you, Till heaven and earth pass one jot or one tittle shall in no-wise pass from the law till all be fulfilled. Whosoever therefore shall break one of these least commandments, and shall teach men so, he shall be called the least in the kingdom of heaven; but whosover shall do and teach them, the same shall be called great in the kingdom of heaven.—Matthew v., 17-19.

Blessed are the poor in spirit; for theirs is the kingdom of heaven.

Blessed are they that mourn; for they shall be comforted.

Blessed are the meek; for they shall inherit the earth.

Blessed are the merciful; for they shall obtain mercy.

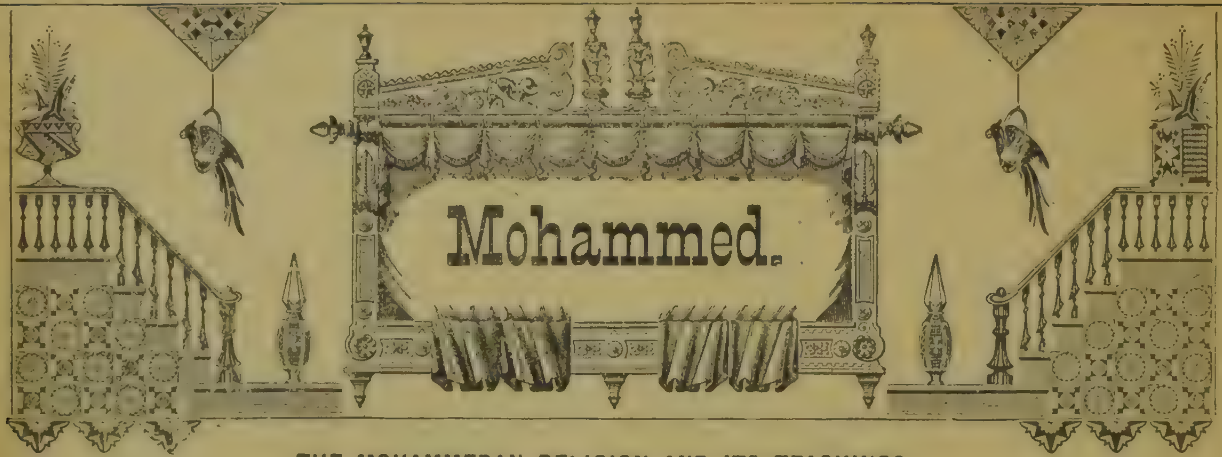
Blessed are the pure in heart; for they shall see God.

Blessed are the peacemakers; for they shall be called the children of God.

Blessed are they which are persecuted for righteousness' sake; for theirs is the kingdom of heaven.

Blessed are ye when men shall revile you and persecute you, and shall say all manner of evil against you falsely, for My sake; rejoice and be exceeding glad, for great is your reward in heaven; for so persecuted they the prophets which were before you.—Matthew v., 2-12.

Ye have heard that it hath been said, thou shalt love thy neighbor and hate thine enemy; but I say unto you, love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use and persecute you.—Matthew v., 43, 44.



THE MOHAMMEDAN RELIGION AND ITS TEACHINGS.

PERSIA, Arabia, Syria, Asia Minor, Egypt, Northern Africa, Asiatic Turkey and Tartary, are included in that portion of the world over which prevails the Mohammedan religion. That an individual could arise in the broad light of history at so late a day, and establish such a wide-spread religion, would indicate him to be a very remarkable man. Such was Mohammed.

The city of his nativity was Mecca, in Arabia, where he was born November 10, 570. His father, Abdallah, who was a merchant in humble circumstances, died two months after his birth, and his mother six years later. His guardianship was then confided to his grandfather, who died two years afterwards, when he went to live with his uncle, Abu Taleb, with whom he made journeys through Syria and other countries; and with another uncle, named Zobias, he traveled extensively throughout Arabia; during which time he acquired valuable knowledge, which, it may well be supposed, served him in good stead in the later years of his eventful life.

MOHAMMED,
Founder of the Mohammedan Religion.

In his varying fortunes he was at one time a shepherd near Mecca; subsequently a linen trader, and, a little later, was in the employ of a wealthy widow named Khadijah, whom he married when about twenty-five years of age, she being fifteen years his senior. Through this marriage he had four daughters and two sons, and with his family he passed ten years of peaceful life, the love of meditation growing upon him to that extent, however, that at forty he was in the habit of resorting to a solitary cave at Mount Hara, where he gave himself up to religious meditation. It was a time in the history of Arabia when reform was needed. Through tyranny and conquest in the surrounding nations, his country was being made the refuge of the religiously oppressed. Hither came the Jews, the worshipers of fire and of idols; and with the varying beliefs and contentions the time was ripe for the inauguration of a reform that should bring order out of chaos.

In his solitude, Mohammed gave himself up to reflection, praying that he might become the instrumentality whereby the people should be saved from their idolatries. While he meditated thus he passed into a convulsion, when an angel appeared to him and commanded him to read. In that condition, it is claimed, he saw and read the decrees of God which he afterwards promulgated in the Koran.

Having settled in his own mind the fact that he was not under the control of an evil spirit, he yielded to the influence thus brought to bear upon him, and the communications continued to come to the end of his life, being dictated to Mohammed by persons in attendance. These revelations, at the close of his life, were collected, and became the Bible of the Mohammedans, known as the Koran.

His wife, Khadijah, became his first convert when he commenced preaching; but, aside from his family and immediate friends, the number of his adherents was very small. Five years went by, at the expiration of which time he announced himself as a prophet, in compliance with a special message. This, however, drew such enmity upon him as to make it necessary for his uncle, Abu Taleb, though not a believer in his mission, to protect him from the violence of the mob.

Five years later, his uncle and wife both died. As before, varying fortune attended him. He had several times been expelled from Mecca, and at last was compelled to flee to Medina to save his life, where he was received with all the honors of a king. There he was not only a prophet, but a temporal ruler also.

During the succeeding ten years he had several battles with his opponents, but in the end he had not only conquered Mecca, which had been the strongest of his opposition, but his doctrines had become the generally accepted faith of the country, and his rule was admitted throughout all Arabia.

Of various pilgrimages which he made to Mecca, his followers that went with him the last time numbered 40,000. On that occasion he ascended Mount Arrafel, with this immense concourse of Moslems, exhorted for the last time his people, and blessed them. In this farewell sermon to his congregation, having a premonition that he was near his end, though only sixty-three years old, he said: "I return to Him who sent me, and my last command to you is, that you love, honor and uphold each other; that you exhort each other to faith and constancy in belief, and especially in the performance of pious and charitable deeds. My life has been for your good, and so will be my death."

Returning to Medina, he sickened and died, June 8, 632, the result of an illness induced by poison given him three years before by an enemy. He died in the arms of Ayesha, his favorite wife, in a house adjoining the Mosque; and, in a portion of the Mosque which has been enlarged to cover the spot, his remains lie to this day.

During the life of Khadijah he had no other wife than her, but after her death, it is claimed, he married twenty. Six died before him; from five he was divorced, and at his death ten were left widows.

Mohammed is said to have been a man of middle stature, having a strong beard, thick hair, bright eyes, much fluency of speech, and, though modest in bearing, had great courage.

Mohammedan writers claim that he possessed the power to have prolonged his life; that the angel Gabriel gave him permission to take life or death; whereupon Mohammed chose death, and by an angel he was thrown into a spasm, which soon terminated in death. Thus ended the life-work of a remarkable man, whose followers to-day number 160,000,000.

What Mohammedanism Teaches.

The Mussulman faith teaches that there is but one God, Lord and Governor of the Universe, who produced all things from nothing, who never begot any person whatever, as He Himself was never begotten by another. Lord and Sovereign over all, we are bound to serve and adore Him only. That we must believe with our hearts and confess with our mouths that Mohammed is the prophet, and that his revealed truth has been transmitted to us through the Koran. That there will be a final resurrection; that the first who will arise upon earth will be Mohammed; that all will come to judgment, and Mohammed will intercede for the wicked. That those whose actions are good, who believe, and confess a belief, in the one God, in Mohammed and the Koran—these shall have perpetual light in paradise with Mohammed; that wicked disbelievers shall be cast into hell, where they shall endure every possible torment; but there, even, those who may believe in the one true God, though morally bad and in hell for a time, at the second intercession of Mohammed may finally have their sins washed away.

To attain to purity and holiness on earth, the Mohammedan faith enjoins various exercises. Perfect cleanliness, frequent prayers, the giving of alms, fasting, and a pilgrimage to Mecca.

While many forms and ceremonies are observed by the followers of this religion, the general outline of belief regarding the resurrection, torment in hell and perpetual bliss in heaven, seems to have been borrowed from the Christian faith, Mohammed being regarded as the prophet instead of Christ.

Extracts From the Koran.

GOD obligeth no man to do more than he hath an ability to perform; God will cause ease to succeed hardship.

It is God who hath created seven heavens and as many different stories of the earth; the divine command descendeth between them.

Hell shall be a place of ambush, a receptacle for the transgressors, who shall remain therein for ages; they shall not taste any refreshments therein, or any drink, except boiling water.

This is the description of paradise, which is promised to the pious. It is watered by rivers; its food is perpetual, and its shade also; this shall be the reward of those who fear God. But the reward of the infidels shall be hell-fire.

Unto those who do right shall be given an excellent reward in this world, but the dwelling of the next world shall be better; and happy shall be the dwelling of the pious—namely gardens of eternal abode, into which they shall enter; rivers shall flow beneath the same; therein shall they enjoy whatever they wish.

Concerning wine and lots; in both there is great sin, and also some things of use unto men; but their sinfulness is greater than their use.

The Lord hath commanded that ye show kindness unto your parents, whether the one of them or both of them attain to old age with thee. Wherefore say not unto them, Fie on you; neither reproach them, but speak respectfully unto them, and submit to behave humbly toward them, out of tender affection.

Give unto him who is of kin to you his due, and also unto the poor and the traveler. And waste not thy substance profusely, for the profuse are brethren of the devils; and the devil was ungrateful to his Lord.

Verily the Lord will enlarge the store of whom he pleaseth, for He knoweth and regardeth His servants.

Give full measure when you measure aught; and weigh with a just balance. This will be better, and more easy for determining every man's due.

Set not up another god with the true God, lest thou sit down in disgrace and destitute. Thy Lord hath commanded that ye worship none beside Him.

Do thou trust in Him who liveth and dieth not, and celebrate His praise who hath created the heavens and the earth, and whatever is between them, in six days.

The servants of the merciful are those who walk meekly on the earth, and when the ignorant speak unto them, answer, Peace; and who pass the night adoring their Lord and standing up to pray unto Him. And whoever repenteth and doth that which is right, verily he turneth unto God with an acceptable conversion.

Verily this present life is only a play and a vain amusement; but if ye believe and fear God, He will give you your rewards.

Consume not your wealth among yourselves in vain; nor present it unto judges, that ye may devour part of men's substance unjustly, against your own conscience.

Marry those who are single among you, and such as are honest of your men-servants and your maid-servants; if they be poor, God will enrich them of His abundance, for God is bounteous and wise. And let those who find not a match keep themselves from fornication until God shall enrich them of His abundance.

God will render of none effect the works of those who believe not, and who turn away men from the way of God; but as to those who believe and work righteousness, and believe in the revelation which hath been sent down to Mohammed (for it is truth from their Lord), He will expiate their evil deeds from them, and will dispose their heart aright.

The law of Koran forbids a man marrying his father's wife, his mother, daughter, sister, aunt, niece, wet-nurse, foster-sister, mother-in-law and daughter-in-law, or free women who are married, and who are not slaves. If he has not means enough to marry a free woman who is a believer, he may marry those of his maid-servants who are true believers.

Ye may divorce your wives twice, and then either retain them with humanity, or dismiss them with kindness. ..But if the husband divorce her a third time she shall not be lawful for him again until she marry another husband. But if he also divorce her, it shall be no crime in them if they return to each other if they think they can observe the ordinances of God.

O true believers, the law of retaliation is ordained you for the slain; the free shall die for the free, and the servant for the servant, and a woman for a woman; but he whom his brother shall forgive may be prosecuted and be obliged to make satisfaction according to what is just, and a fine shall be set on him with humanity. And he who shall transgress after this by killing the murderer shall suffer a grievous punishment.

Observe prayer, and give alms, and obey the apostle, that ye may obtain mercy.

Walk not proudly in the land, for thou canst not cleave the earth; neither shalt thou equal the mountains in stature.

Emanuel Swedenborg.

Biographical Sketch of the Swedish Seer.

AS A LEARNED man and a "prophet" chosen to reveal light from heaven, Emanuel Swedenborg may justly be classed with those who are recognized by a large number of followers as having received spiritual instruction superior to what is given most mortals on earth to know.

He was born in Stockholm, Sweden, January 29, 1688; his father, Bishop of Skarn, in West Gothland, being Jesper Swedborg, which name, by the ennobling of the family, was **changed to Swedenborg, in 1719.**

Carefully educated in the Lutheran **church, he was remarkable, as a child,** for spiritual susceptibility, the claim **being that angels spoke through him. Completing his studies at Upsal, he spent the following two years in travel through Holland, England and France, afterwards settling in Griefswald, in** Pomerania, and engaged in scientific pursuit. He subsequently established and published in Sweden, for two years, a scientific journal devoted to mathematics and mechanics: during which time he became acquainted with Christopher Palhem, an engineer, who secured through King Charles XII. his appointment as assessor extraordinary of the College of Mines. During the succeeding years he gave attention to mining engineering, published various works relating to scientific subjects, **and was elected to membership in** academies of science in Stockholm, **St. Petersburg and Upsal. In 1745,** being then fifty-seven years of age, he announced his scientific labors finished, and, feeling himself called by God, entered upon the work of revealing to men a new system of religious truth, the claim being that he was permitted to converse with spirits and angels, and could thus clearly reveal the mysteries of the spiritual world.

In order to devote himself exclusively to his work, he retired from other labor, and commenced his mission by first reading the Christian Bible in the original, following which he wrote several books explanatory of his revelations regarding the Scriptures, which he published **at his own expense; among them the Arcana Celestia, in eight large quarto volumes, being a commentary on Genesis and Exodus, besides accounts of "wonderful things seen and heard in heaven and hell." These were followed by many other works of a religious character.**

Never married, he was a modest, unassuming man, who never alluded to his spiritual intercourse unless closely questioned; but of his ability to converse with spirits, and thus receive intelligence of distant countries and places, independent of other means of communication, his believers had not the slightest doubt.

A stroke of apoplexy, on Christmas eve in 1771, deprived him of speech and lamed one side. In a lethargic state he remained for three weeks, at the end of which he re**covered his speech, when he told his** attendants that the angels had kept him **company during the time, as usual.** He died in London, March 24, 1772, **being at the time eighty-four years, eight weeks and five days old.**

STOCKHOLM

(where Swedenborg was born January 29th, 1688).

His body was deposited in the vault of the Swedish church in Princess' Square, Radcliffe Highway, London, and there it has rested for over a hundred years. The revelations which he taught have impressed themselves upon the minds of thousands of believers who make the congregations in the New Jerusalem churches in many parts of the civilized world.

What Swedenborgianism Teaches.

The writings of Swedenborg reveal the fact that a hidden meaning is in the Scriptures, not generally understood, which is explained by the law of correspondence between natural and **spiritual things. Thus the garden of** Eden and what it contained corre**sponds to the human soul, its impulses** and affections. That the disobedience of Adam and Eve symbolizes the departure of mankind at an early period from their original state of innocence. That the New Jerusalem, seen by John descending from God out of heaven, signifies not only the chief city of Palestine, but the Lord's church, and particularly the religious doctrines by which a person is united into a church. Hence the New Jerusalem church, which is synonymous with a new doctrine of pure truth from the Holy Word, is destined to regenerate the world. **The doctrines and belief of the Swedenborgians are outlined on another page.**

Joseph Smith.

Sketch of the Rise and Progress of Mormonism.

AT SHARON, Vt., December 23, 1805, was born Joseph Smith, the subject of this sketch. When ten years of age his parents removed to Palmyra, N. Y., and four years afterwards went to Manchester, N. Y., a town six miles distant, where Joseph spent his time on a farm. With a mind much given to religious contemplation, Smith, then about fourteen years of age, retired to a grove and earnestly called upon the Lord. While thus engaged in supplicating, he claims to have been enrapt in a heavenly vision, when he saw two glorious personages, who exactly resembled each other in features and likeness, surrounded by a brilliant light, which eclipsed the sun at noonday. They assured him that at some future time the fullness of the gospel should be made known unto him.

On the evening of September 21, 1823, while engaged in prayer, an angel encompassed by a halo of light appeared to him, and announced that he was chosen to be an instrument in the hands of God for the promulgation of a new dispensation. He at that time was told, also, where plates were deposited, on which were engraven an abridgment of the records of the ancient prophets that had existed on the continent. After many visits from the angels, in which he was told of the glory of events that should transpire in the last days, the angel, he further claims, delivered the plates into his hands on the morning of September 22, 1827

These plates, he assures us, had the appearance of gold, being in size about six by eight inches, and about the thickness of tin. They were filled with engravings in Egyptian characters, and bound together in a volume, as the leaves of a book, with three rings running through the whole, the volume being about six inches thick. With the plates came a pair of spectacles, the glasses in which being transparent were called Urim and Thummim; and looking through these he was enabled to translate the engravings on the plates, which related to the early history of America, from its first settlement by a tribe who came from the Tower of Babel at the confusion of languages, to the beginning of the fifth century of the Christian era.

The records on the plates confirmed the appearance of Christ on earth and His resurrection, and was especially designed to aid in a fuller and more complete understanding of the Bible, and was to be incorporated with it.

SALT LAKE CITY, UTAH.

In translating the plates, Smith, with the aid of the stone spectacles, seated beside a blanket suspended in the room, to hide profane eyes from looking upon the inscriptions, read the records upon them, while Oliver Cowdery wrote it as Smith read. When completed, this became the Book of Mormon, which found believers in sufficient number to enable Smith's followers to found the Church of the Latter-Day Saints by an organization at Manchester, N. Y., April 6, 1830.

Various opinions exist as to the authenticity of the Mormon scriptures, the plates being carried away by the angel that delivered them.

The Book of Mormon has the sworn testimony of Oliver Cowdery, who wrote the book into English, that he saw the plates, and to his name is appended the signatures of ten others who affirm that they also saw them. The opponents claim that afterwards, in a quarrel with Smith, some of these witnesses renounced Mormonism and declared that they had sworn false as to seeing the plates.

It is believed by some that the matter which composes this book was written as a religious novel by an educated man, formerly a clergyman, named Solomon Spalding, who died soon after taking his manuscript to a Pittsburgh printing office. That in this office was a man named Sidney Rigdon, a printer, who, attracted by the Oriental and antique style of the composition, copied it, furnished it to Smith to read to Cowdery, and thus, with more or less of other composition intermixed, the matter for the Book of Mormon was obtained. Rigdon afterwards left the printing office, and, associating himself with Smith, engaged in preaching.

The basis of belief which the Mormons, who styled themselves Latter-Day Saints, preached in the beginning was that the millennium was near at hand, and that America, the land of the free, somewhere in the interior of the continent, was to become the New Jerusalem.

From New York Smith and Rigdon went to Independence, Mo., where they arranged for the erection of a temple. Subsequently they were for some years at Kirtland, Ohio, where they endured various persecutions, Brigham Young in the meantime joining them there.

Returning again to Missouri, they were soon compelled to leave there and take up settlement in Illinois, where was built up the city of Nauvoo, in which Smith was mayor, president of the church, and commander of a military organization.

In all the movements from one State to another, the erection of churches or the doing of any important work, the same was usually done through revelations that came to Smith. In 1843, Smith, who then had one wife, received a revelation authorizing polygamy, which caused a dissension in the Mormon ranks. In an exposition of Smith and Rigdon, sixteen women testified that these leaders had made attempts to seduce them, under the guise of a revelation from heaven. Foster and Lane, who printed this expose, had their printing office destroyed by the Mormons, and were compelled to flee to Carthage, Ill., where they obtained warrants for the arrest of Joseph Smith, Hyrum Smith (his brother), and several others.

The Smiths were lodged in jail at Carthage. On the evening of June 27, a mob attacked the jail. In the contest Hyrum Smith was shot and killed in the building, and Joseph having emptied the contents of his revolver upon the crowd, was shot while attempting to escape from a window, and fell to the ground dead.

Brigham Young was appointed to the head of the church, and in 1848 the Mormons emigrated to Utah, where, in the valley of the Great Salt Lake, they made their homes, and where they laid out and built the town of Salt Lake City. In 1852, nine years after the revelation to Smith, Brigham Young affirmed the revelation authorizing polygamy, which has been a distinctive feature of the Mormon religion since that time. Young died Aug. 29, 1877, and was succeeded by John Taylor. Died, July 25, 1887.

What the Mormons Believe.

They believe in the one God and Christ the Mediator and Savior, as revealed in the Old and New Testaments, which, aided by the Book of Mormon, they take as their rule of faith. They believe further that we have, before being on earth, existed as spirits in other conditions, and that we descend to earth to pass life here as a probationary discipline. They believe in the necessity of faith, repentance, baptism by immersion, the sacrament of the Lord's Supper, and that those who accept the divine word as revealed in the Bible and the Book of Mormon, and do right, will inherit eternal happiness; that those who disobey must suffer in the next existence.

Polygamy is justified by them on the ground of necessity for the protection of woman, though forbidden by the Mormon Bible.

Extracts from Book of Nephi,

MORMON BIBLE.

THE Lord giveth no commandments unto the children of men, save he shall prepare a way for them that they may accomplish the thing which he commandeth. Wherefore let us be faithful in keeping the commandments of the Lord.—1 Nephi iii., 7, 16.

The Lord slayeth the wicked to bring forth his righteous purposes. It is better that one man should perish than that a nation should dwindle and perish in unbelief.—1 Nephi iv., 13.

The Lord is able to do all things, according to his will, for the children of men, if it so be that they exercise faith in him. Wherefore let us be faithful unto him.—1 Nephi vii., 12.

Remember, O man, for all thy doings thou shalt be brought into judgment. Wherefore if ye have sought to do wickedly in the days of your probation, then ye are found unclean before the judgment seat of God; and no unclean thing can dwell with God. Wherefore ye must be cast off forever. —1 Nephi x., 20, 21.

Whoso would hearken unto the word of God, and would hold fast unto it, they would never perish; neither could the temptations and the fiery darts of the adversary overpower them unto blindness, to lead them away to destruction.—1 Nephi xv., 24.

Behold, the Lord hath created the earth that it should be inhabited; and he hath created his children that they should possess it. And he raiseth up a righteous nation, and destroyeth the nations of the wicked. And he leadeth away the righteous into precious lands, and the wicked he destroyeth and curseth the land unto them for their sakes. And he loveth those who will have him to be their God.—1 Nephi xvii., 36–38, 40.

New Mormon Temple, Salt Lake City, Utah.

The time speedily shall come that all churches which are built up to get gain, to get power over the flesh, to become popular in the eyes of the world, who seek the lusts of the flesh and the things of the world, and to do all manner of iniquity, yea, in fine, all those who belong to the kingdom of the devil, are those who need fear, and tremble, and quake; they are those who must be brought low in the dust, they are those who must be consumed as stubble.—1 Nephi xxii., 23.

The Messiah cometh in the fullness of time, that he may redeem the children of men from the fall. And because that they are redeemed from the fall, they have become free forever—knowing good from evil—to act for themselves.—2 Nephi ii., 26.

O the vainness, and the frailties, and the foolishness of men! When they are learned they think they are wise, and they hearken not unto the counsel of God, for they set it aside, supposing they know of themselves, wherefore their wisdom is foolishness, and it profiteth them not; and they shall perish. But to be learned is good, if they hearken unto the counsels of God.—2 Nephi ix., 28, 29.

Who are cursed:

The rich, who are rich as to the things of the world; because they are rich they despise the poor, and they persecute the meek, and their hearts are upon their treasures; wherefore their treasure is their god, and behold, their treasure shall perish with them also. The deaf, that will not hear, for they shall perish. The blind, that will not see; for they shall perish also. The uncircumcised of heart; for a knowledge of their iniquities shall smite them at the last day. The liar; for he shall be thrust down to hell. The murderer, who deliberately killeth; for he shall die. Those who commit whoredoms; for they shall be thrust down to hell. Those that worship idols; for the devil of all devils delighteth in them. In fine, all those who die in their sins; for they shall return to God and behold his face, and remain in their sins.—2 Nephi ix., 30, 31.

The Lord doeth that which is good among the children of men; and he doeth nothing save it be plain unto the children of men; and he inviteth them all to come unto him, and partake of his goodness; he denieth none who come unto him, black and white, bond and free, male and female; and all are alike unto God, both Jew and Gentile.—2 Nephi xxvi., 33.

Behold the Lamanites, your brethren (whom ye hate, because of their filthiness and the cursings which have come upon their skins), are more righteous than you; for they have not forgotten the commandment of the Lord, which was given unto our fathers, that they should have, save it were one wife; and concubines they should have none.—Book of Jacob iii., 5.

Modern Spiritualism.

IN THE YEAR 1843, Professor Grimes, a phrenologist and lecturer on magnetism, gave an exhibition of his powers as a mesmerist in one of the public halls in Poughkeepsie, N. Y. Attention thus directed to the subject caused a citizen in the town, Mr. William Livingston, to experiment upon a boy, an apprentice in a boot and shoe store, whom he chanced to meet there, with a view to determining the truth or falsity of that which was claimed as a science. The boy thus selected for trial by Livingston was Andrew Jackson Davis. He was then sixteen years old, slight in frame, delicate in constitution, honest, inexperienced and uneducated. Born in Blooming Grove, Orange county, N. Y., Aug. 11, 1826, Andrew had with his parents been a resident of several places prior to coming to Poughkeepsie, mostly in rural neighborhoods, where his father, who was a shoemaker in very humble circumstances, in turn worked at weaving, shoemaking, and by the day for various farmers.

The mother of Davis, a woman of delicate constitution, possessed the gift of second sight, which enabled her to detail where lost things about their premises might be found; to see sights, and hear sounds, in which condition she exhibited an abstraction of mind that made her oblivious to things about her. From her the son inherited an extreme susceptibility of impression, through which, it is stated, he often heard music in the air, when in the fields, and words addressed to him from an unseen source.

On the occasion of the first experiment by Livingston, Davis went from the mesmeric into the clairvoyant condition, in which, while blindfolded, he minutely told the time by holding a watch to his forehead, read a newspaper, told the ailments of those present and described various articles presented for examination.

From Photo. by SARONY, *New York.*

MRS. BESANT,

The most Eloquent of Modern Spiritualists.

On the evening of January 1, 1844, he passed into the third magnetic condition, in which he claimed he could see the internal organs of each person in the room, could see the interior of other houses and their inmates, and see the entire city; that on this occasion, for the first, his mind went out and away, thousands of miles, and nature revealed itself as it could not be seen with mortal eyes; that every object, from a grain of salt to the loftiest mountain, had each an atmosphere of its own. Thus the flower, the blade of grass, the tendril, the leaf, the mineral—all had an atmosphere with a color distinctly its own. This emanation encircling some species of vegetation seemed from four inches to eight feet in diameter. Each animal had also a sphere about it. At this time, as continually afterwards, was revealed to him the law of sympathy by which everything in nature exists, the position of minerals in the earth, the dependence one upon the other of earth, trees, vegetation, animals, human beings, and of the sun, moon and stars in the heavens.

On the evening of March 6, 1844, he went, in company with Mr. Livingston, to a residence in Poughkeepsie, to make a clairvoyant examination of a patient, on which occasion the somnambulic condition remained so firmly fastened upon him after he left the house and parted company with Livingston, as to cause him to walk along the banks of the Hudson to Catskill, a distance of forty miles from Poughkeepsie. Restored to consciousness at the end of his journey, he obtained food, and being directed as to his way back, was a portion of the time again in the clairvoyant condition on his return. Many singular visions, it is related, appeared to him during this journey, which he was compelled to make by an unseen power.

At that time he claims to have conversed with invisible beings, who gave him instructions as to the position he should occupy as a teacher. During the succeeding year he was engaged with Mr. Livingston in giving diagnoses of disease and prescriptions to the sick, hundreds of the afflicted crowding their rooms.

Within this time Davis developed other powers of a philosophical character, and, severing his connection with Livingston, he went with Dr. S. S. Lyon, of Bridgeport, Conn., to New York city, in the fall of 1845, to deliver a series of private lectures in the clairvoyant condition, the Rev. William Fishbough, of New Haven, Conn., being chosen to transcribe the revelations.

In a room at No. 92 Greene street, New York, on the 28th of November, 1845, there sat young Davis, Dr. Lyon, Mr. Fishbough and three witnesses, among them being Dr. T. Lea Smith. Only a few had been invited to witness the exhibition.

When all was in readiness, with Mr. Fishbough at the table, Davis, in a clairvoyant state, with closed eyes, after a little time of stillness, slowly remarked: "This night I reach my superior condition." Then began the first part of that series of discourses which afterwards appeared as "Nature's Divine Revelations," a scientific, metaphysical work which attracted much attention at the time because of the rationalistic views advanced. More especially was the work regarded very remarkable as coming in such a manner from an illiterate, uneducated youth, twenty-one years of age.

Davis, Fishbough and Lyon remained in New York two years, the clairvoyant giving medical prescriptions during a portion of each day, and at other times dictating what was to be written. During the time on one occasion, having discovered from a clairvoyant examination, that a certain lady patient would die of a cancer at a given time, he repaired to her residence at the period designated to witness the departure of the spirit from the body—a dissolution termed death.

The birth of this woman into the spirit-world Davis very minutely described. As her body lay motionless, with weeping friends around it, he passed into the superior condition, and in an adjoining room he beheld first a bright light, as the extremities of the body grew cold, begin to gather itself above her head. Gradually this light grew larger, then the woman herself began to appear, first her head and then her body being developed, until, as life became extinct in the body, she stood as a spirit in the freshness of mature life above the inanimate frame in which she had lived.

She hovered in spirit form a brief time among her friends, who mourned her as dead, took a brief survey of those who did not realize that she stood in life beside them, gave a farewell look at her former home of clay, then passed through an open window, joined other spirit friends, and passed heavenwards out of sight.

Two years went by. The lectures being completed, the clairvoyant power gradually diminished, and Davis no longer submitted to the magnetic manifestations. He has written several books since then, but, his friends claim, none containing greater wisdom than that entitled "Nature's Divine Revelations." He subsequently traveled extensively throughout the country, engaged in lecturing. Mr. Davis has been twice married, and of late years has resided at Orange, New Jersey.

In 1848 the so-called spirit-rappings made their appearance at Rochester, N. Y., and at other points. These were followed by various other physical manifestations, which to skeptics have never been entirely satisfactorily accounted for. Spiritualists believe that these demonstrations are made by spirit-power, and that the revelations of Davis came also through the agency of departed spirits once on earth.

The adherents of this belief have multiplied so rapidly that they now number, it is estimated, some ten millions of believers. At their fifth annual convention, held at Rochester, N. Y., 1868, the Spiritualists of America formed themselves into an association, and announced and adopted the following as their basis of faith:

What Spiritualists Believe.

THAT man has a spiritual nature as well as a corporal; in other words, that the real man is a spirit, which spirit has an organized form composed of spiritual substance, with parts and organs corresponding to those of the corporeal body.

That man, as a spirit, is immortal, and has continued identity. Being found to survive that change called physical death, it may be reasonably supposed that he will survive all future vicissitudes.

That there is a spirit-world, with its substantial realities, objective as well as subjective.

That the process of physical death in no way essentially transforms the mental constitution, or the moral character of those who experience it.

That happiness or suffering in the spirit-world, as in this, depends not on arbitrary decree, or special provisions, but on character, aspirations and degree of harmonization, or of personal conformity to universal and divine law.

Hence, that the experiences and attainments of this life lay the foundation on which the next commences.

That since growth is the law of the human being in the present life: and since the process called death is in fact but a birth into another condition of life, retaining all the advantages gained in the experiences of this life, it may be inferred that growth, development, or progression, is the endless destiny of the human spirit.

That the spirit-world is near or around, and interblended with our present state of existence; and hence that we are constantly under the cognizance and influence of spiritual beings.

That as individuals are passing from the earthly to the spirit-world in all stages of mental and moral growth, that world includes all grades of character from the lowest to the highest.

That since happiness and misery depend on internal states rather than on external surroundings, there must be as many grades of each in the spirit-world as there are shades of character—each gravitating to his own place by the natural law of affinity.

That communications from the spirit-world, whether by mental impression, inspiration, or any other mode of transmission, are not necessarily infallible truths, but, on the contrary, partake unavoidably of the imperfections of the mind from which they emanate, and of the channels through which they come, and are, moreover, liable to misinterpretation by those to whom they are addressed.

Hence, that no inspired communication, in this or any past age (whatever claims may be or have been set up as to its source), is authoritative, any further than it expresses truth to the individual consciousness; which last is the final standard to which all inspired or spiritual teachings must be brought for test.

That inspiration, or the influx of ideas and promptings from the spirit-world, is not a miracle of a past age, but a perpetual fact, the ceaseless method of the divine economy for human elevation.

That all angelic and demoniac beings which have manifested themselves, or interposed in human affairs in the past, were simply disembodied human spirits, or beings of like character and origin, in different grades of advancement.

That all authentic miracles (so called) in the past, such as the raising of the apparently dead, the healing of the sick by the laying-on of hands or other simple means, the power over deadly poisons, the movement of physical objects without visible instrumentality, etc., have been produced in harmony with universal laws, and hence may be repeated at any time under suitable conditions.

The Writings of A. J. Davis.

Although Mr. Davis attended school but a few months, in which he mastered only the barest rudiments of writing, spelling and reading, he has become a well known lecturer and an author of many books treating upon the philosophy of Life, Death and the Hereafter. With such limited opportunity for educational advancement in the schools, and in his early home, his present intellectual endowment is very remarkable. His friends claim it to be the result of direct spirit assistance. The books claiming his authorship are named as follows:

Nature's Divine Revelations.
The Physician. Vol. I. Gt. Harmonia.
The Teacher. Vol. II. Gt. Harmonia.
The Seer. Vol. III. Gt. Harmonia.
The Reformer. Vol. IV. Gt. Harmonia.
The Thinker. Vol. V. Gt. Harmonia.
Magic Staff—An Autobiography of A. J. Davis.
A Stellar Key to the Summer-Land.
Arabula, or Divine Guest.
Approaching Crises, or Truth vs. Theology.
Answers to Ever-recurring Questions from the People.
Children's Progressive Lyceum Manual.
Death and the After-Life.
History and Philosophy of Evil.
Harbinger of Health.
Harmonial Man, or Thoughts for the Age.
Events in the Life of a Seer. (Memoranda).
Philosophy of Special Providence.
Free Thoughts Concerning Religion.
Penetralia, Containing Harmonial Answers.
Philosophy of Spiritual Intercourse.
The Inner Life, or Spirit Mysteries Explained.
The Temple—on Diseases of Brain and Nerves.
The Fountain, with Jets of New Meanings.
Tale of a Physician, or Seeds and Fruits of Crime.
Genesis and Ethics of Conjugal Love.
Diakka, and their Earthly Victims.
Views of Our Heavenly Home.

Here and the Hereafter.

That the causes of all phenomena—the sources of all power, life and intelligence—are to be sought for in the internal or spiritual realm, not in the external or material.

That the chain of causation, traced backwards from what we see in nature and in man, leads inevitably to a Creative spirit, who must be not only a *fount of life* (love), but a *forming principle* (wisdom)—thus sustaining the dual parental relations of father and mother to all individualized intelligences, who consequently are all brethren.

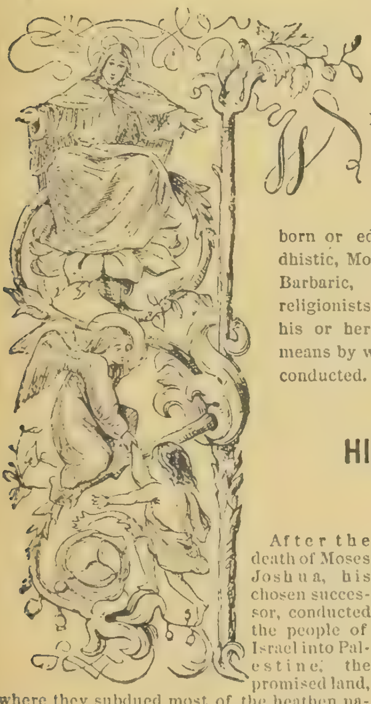
That man, as the offspring of this Infinite Parent, is in some sense his image or finite embodiment; and that, by virtue of this parentage, each human being is, or has in his inmost nature, a germ of divinity—an incorruptible offshoot of the divine essence, which is ever prompting to good and right.

That all evil in man is in harmony with this divine principle; and hence whatever prompts and aids man to bring his external nature into subjection to and in harmony with, the divine in him—in whatever religious system or formula it may be embodied—is a "means of salvation" from evil.

That the hearty and intelligent conviction of these truths, with a realization of spirit-communication, tends: (1) To enkindle lofty desires and spiritual aspirations, an effect opposite to that of materialism, which limits existence to the present life. (2) To deliver from painful fears of death, and dread of imaginary evils consequent thereupon, as well as to prevent inordinate sorrow and mourning for deceased friends. (3) To give a rational and inviting conception of the after-life to those who use the present worthily. (4) To stimulate to the highest possible uses of the present life, in view of its relations to the future. (5) To energize the soul in all that is good and elevating, and to restrain from all that is evil and impure. This must result, according to the laws of moral influence, from a knowledge of the constant pressure or cognizance of the loved and pure. (6) To promote our earnest endeavors, by purity of life, by unselfishness, and by loftiness of aspiration, to live constantly *en rapport* with the higher conditions of spirit life and thought. (7) To stimulate the mind to the largest investigation and the freest thought on all subjects, especially on the vital themes of spiritual philosophy and duty, that we may be qualified to judge for ourselves what is right and true. (8) To deliver from all bondage to authority, whether vested in creed, book, or church, except that of received truth. (9) To cultivate self-reliance and careful investigation by taking away the support of authorities, and leaving each mind to exercise its own truth-determining powers. (10) To quicken all philanthropic impulses, stimulating to enlightened and unselfish labors for universal human good, under the encouraging assurance that the redeemed and exalted spirits of our race, instead of retiring to idle away an eternity of inglorious ease, are encompassing us about as a great cloud of witnesses, inspiring us to the work, and aiding it forward to a certain and glorious issue.

Religious Denominations.

History, Government and Beliefs of Various Church Organizations.



ORIGIN OF VARIOUS FORMS OF WORSHIP.

WHATEVER may be the nationality of individuals, or whatever may be the religion to which they have been born or educated—whether Buddhistic, Mohammedan, Christian or Barbaric, it will be found, if religionists at all, that each has his or her peculiar ideas of the means by which a worship shall be conducted.

While no two minds, probably, ever exactly agree concerning human destiny any more than two faces ever look exactly alike, yet, in every community there will generally be a certain number that will nearly enough agree in religious opinion to form an organization. If this organization lives, retains its individuality, and has peculiarities of belief and government distinctly its own, it becomes a denomination.

Among the believers in the Christian religion there have been and are at the present time many different grades of opinion. There are, in all, over one thousand different religions. The history of several of the most prominent of the religious organizations and beliefs will be found in the succeeding pages relating to denominations.

HISTORY OF THE JEWISH RELIGION.

After the death of Moses Joshua, his chosen successor, conducted the people of Israel into Palestine, the promised land, where they subdued most of the heathen nations and divided the country among themselves. Their history, as recorded in sacred writ, shows that they tired of the Theocracy, or God government, and the judicial system under which they had lived, and desired a monarchal form of government. Saul, the son of Kish, was chosen for the first sovereign, and with varied fortunes and under various kings, sometimes relapsing into idolatry, and again returning to obedience to God; sometimes attaining extreme prosperity, and again falling into degradation, they retained possession of their inheritance, until Nebuchadnezzar, the king of Babylon, destroyed the Jewish nation and carried its inhabitants into captivity, about the year of the world 3416, or about 388 years after the rebellion which separated the ten tribes from that of Judea. They were retained in captivity in Babylon for seventy years, but released by Cyrus. Most of them then returned to Palestine, rebuilt the city and temple at Jerusalem, and renewed their covenant with God, but many remained in Babylon. About A. M. 3653 the King of Persia ravaged part of Judea, and carried away a great number of prisoners. About thirty years afterwards, and also eight years later, Ptolemy, King of Egypt, carried tens of thousands of the Jews into Egypt, using them kindly. Thirty new cities in Asia were also settled with Jews, by Seleucus Nicator. About A. M. 3834 Antiochus Epiphanes forced his way to Jerusalem and murdered 40,000 Jews. Two years afterwards his troops pillaged the cities of Judea, murdered multitudes of men and carried off 10,000 women and children prisoners; the holy temple at Jerusalem was devoted to the worship of a Grecian idol, and the Jews were exposed to the basest treatment. About A. M. 3840 the city and temple of Jerusalem were regained and repaired by Nicanor. For thirty years more the country was ravaged, deluged in blood, and desolated by various nations and civil broils, and for twenty-four years was oppressed by Herod the Great, who at length assumed the government. Twenty years before the birth of Christ he rebuilt with great splendor the Jewish temple at Jerusalem. About A. M. 4004 Christ was born, only to be rejected as the promised Messiah by the Jews, who crucified him. About the year 70 after Christ Jerusalem was destroyed by Titus, the Roman General; and in that catastrophe about 1,100,000 Jews perished. Since then the remainder and their descendants have been scattered, persecuted, slain and enslaved among all nations of the earth, but have, through all, retained their distinctive national characteristics, preserving their Jewish worship, devoid of animal sacrifices and having undergone several changes. For eighteen centuries they have kept themselves a separate people, worshiping one God and awaiting the coming of the Messiah, who was promised by their prophets 700 years before the advent of Christ.

In numbers they are probably as strong as at any time they formerly were in Palestine. In every nation they live and prosper. Their civil government is that of the respective countries in which they dwell.

In religion almost all modern Jews hold to certain distinctions in food and ceremonies, and adhere as closely to the Mosaic dispensation as their dispersed condition will permit. They meet in their synagogues (or places of worship) on the seventh day of the week, as of old, instead of on the first, as the Christians do. The Jews formerly sat during the public services with their hats on. The service consists chiefly in reading the ancient laws of Moses, together with a variety of prayers. They repeat blessings and particular praises to God, not only in their prayers, but on all accidental occasions, and in almost all their actions. All vain swearing and the unnecessary use of the name of God is forbidden. All their meats are prepared by Jewish butchers in a peculiar manner, to avoid contamination from prohibited food. They acknowledge a two-fold law of God—written and unwritten; the former is found in the five first books of our Old Testament; the latter is handed down from generation to generation by word of mouth. The ceremony of circumcision is practiced upon infants eight days old, as in the days of Abraham. But, especially in the United States, the Jews gradually become less rigid in their national practices and conform more to the manners and customs of the American people, and the eating of pork is not now considered so great an abomination as formerly.

The restoration of Palestine to the Jews before the end of the world is predicted in the Old Testament prophecies. Their gathering into the Holy Land is to result in their becoming a strong and prosperous nation, in which the promised Messiah is expected to be received by them and govern them.

Religious Belief.

The Jews believe in one God, the Creator of all things, first principle of all beings, self-sufficient and independent; without whom no created being can subsist; having a unity peculiar to himself; being eternal and incorporeal; who is the sole object of adoration and worship; having no mediator between him and mankind. That Moses was a prophet of God, superior to all others, enjoying a peculiar gift from God in this direction; that the prophecies of Moses were true; that the law that he left was purely dictated by God himself to Moses, from whom they received and have it to-day. That this law is unchangeable; that God will not give another, and that there can be nothing added to or taken from it. That God knows the most secret thoughts of men and governs all their actions; that he will reward those who observe his law, and severely punish those who are guilty of violating it; that of these rewards eternal life is the best and greatest, and of punishment, damnation of the soul is the most severe. That a Messiah, of the royal house of David, shall yet come to deliver Israel, and that God, in his own good time, will raise the dead to life.

THE ROMAN CATHOLIC CHURCH.

Its History, Government, Belief and Form of Worship.

THE Roman Catholic Church traces its origin to the days of the Apostle Simon Peter, one of the personal disciples of Jesus Christ, from whose lips was addressed to him that remarkable passage in the Scriptures: "Thou art Peter; and upon this rock I will build my church." Whatever controversy may arise upon the mistranslation or misconception of this quotation, it is clung to with unswerving tenacity by the ancient and modern writers of the Roman Catholic Church as sufficient authority for all that it believes and does as a mighty system of religion.

It is claimed, also, that Peter visited Rome and established there the church that now venerates him as its founder and its first Pope. On this point, however, great diversity of opinion exists; but the fact remains, that upon this belief rests and is perpetuated the Papal Church of Rome.

Rome is to-day, as in the past centuries of the Christian church, the great center of the Roman Catholic religion, and the long line of Popes, including the present potentate, Leo XIII., claimed their supremacy over the universal Christian church. According to the records of the church, the line of supreme Pontiffs is unbroken from A. D. 42 to A. D. 1888.

Form of Government.—The Church of Rome is governed by the Pope; his counselors, the college of seventy cardinals, appointed from many nations, and classified as cardinal bishops, cardinal priests and cardinal deacons, and they rank as secular princes, next to the kings of the earth; after these succeed archbishops, bishops and the various orders of vicars and priests, each holding proportionate rank and sway, according to the degree of their office. The Popes are elected by the cardinals, but the Pope appoints the cardinals. The common people are, therefore, subject to their bishops; the bishops to the archbishops; the archbishops to the cardinals, and all are controlled by the Pope; thus there is "one church, having one faith, under one head." In all ecclesiastical matters the infallibility of the Pope is maintained, whatever differences may exist in the church as to his temporal authority.

The Discipline of the Church.—Canon law, compiled from the decrees of different Popes and councils of the church, and of several passages of the holy fathers and other reputable writers, and other authoritative works, now regulates the Roman Catholic Church, in place of the canons of the apostles, the apostolic constitutions, and the ancient compilations of the church. No diversity of faith is allowed in the church; but in matters of worship or discipline a difference is permitted, so long as peace is not subverted or communion broken. The Pope extends his care and solicitude to every Roman Catholic church in the world; he enacts new rules of discipline, abrogates others, and punishes those who do not obey them; decides in church differences, and listens to the appeals of all bishops. No priest or prelate in the church may marry; official vestments for the priesthood are prescribed for the greater decency of the public worship; church worship, formerly conducted in a tongue almost wholly unknown to the mass of the congregation, though largely yet in Latin, is now varied by the presentation of moral truths, in the English tongue, so clearly expounded in common language, as to enable the people to understand the moral law. Lent, the fast in commemoration of the fasting of Jesus in the wilderness for forty days, is strictly kept, as a time for doing penance for sin. It is also a preparation for celebrating the greatest festival of the church, known as Easter, the anniversary of the resurrection of Christ from the dead. Numerous other fast and feast days are prescribed by the church and observed by devout Catholics in all countries. During these fasts no animal flesh is permitted to be eaten, except on certain days and under special circumstances. The Christian Sabbath is always a church holiday.

Religious Orders.—In Catholic countries, in all quarters of the globe, exist several orders of priests, known as monks, Basilians, Benedictines, Augustinians, Dominicans, Franciscans, etc. All belonging to these orders take upon themselves solemn vows of chastity, poverty and obedience for life. Usually they are under the jurisdiction of the Pope, instead of the bishops, and differ only in discipline, manner of dress, and particular privileges granted to each other. Several orders of nuns, or female devotees, also exist, each following its own rules and wearing a peculiar costume. Their vows of consecration are similar to those of the monks; after their profession they are never allowed to leave the convent during life, without the leave of the bishop, and then only on the burning of the convent or some similar occasion; nor is any man permitted to enter the convent without the bishop's permission, and for some necessary purpose.

Principal Beliefs of the Church.—The fundamental principle of the church is the doctrine that God has promised and does exert over it a constant and perpetual protection, to preserve it from destruction, error or fatal corruption. This belief assures the infallibility of the church. The Pope is the representative of God on earth, and hence his own infallibility. The bread and wine of the sacrament of the Lord's Supper are representative of the body and blood of Christ, and in partaking of them communicants come nearer the Divine presence. There is a place beyond the grave, and this side of heaven, called purgatory through which the souls of believers must pass, as a disciplinary and purifying process, to fit them for heavenly joy. Saints, who are believed to reign with Christ after this life, should be honored and prayed to. Principal among these is the Virgin Mary, the mother of Jesus, whose intercession with her Son for her supplicants is universally sought by all devout believers. The images of Christ, the Virgin Mary and the saints and saintly relics, are held in veneration and honor. Sins should be confessed to the priests, as the representatives of Christ, who are enabled by His appointment to declare His forgiveness of sin. Indulgences are obtained only by special prayer and great devotional application.

Form of Worship.—Public services are mostly conducted in the Latin language, after set forms, called masses and vespers, as fully printed in the missals of the churches. These are divided into solemn or high mass, plain or low mass; mass sung or said; public mass and private mass. These vary in details, and are conducted by bishops and priests, a high mass being assisted by other ministers of the church. Vespers are the evening services. Another form of worship, called canonical hours, combines prayer and instruction, consisting of psalms, lessons, hymns, prayers, anthems, versicles, etc., divided into sections for use at different hours. The fasts and festivals have distinctive peculiarities of worship.

Changes.—Under Pope Gregory, about the year 600, ancient Britain was converted from Paganism to Catholicism, which continued to flourish, with varying success, until the accession of Henry VIII., in the sixteenth century. Henry sought the aid of the Pope in getting a divorce from his wife, the queen, in order that he might marry Anne Boleyn. This being refused, Henry threw off his allegiance to Catholicism, and became the head of the church in England. In the succeeding reign of his only son, Edward VI., also in the sixteenth century, the Church of England was established, and England was arrayed on the Protestant side of the struggle then going on in Europe. When Queen Mary, in 1553, ascended the throne, she brought England again under Papal dominion, and slew about 300 Protestants, including some of their most prominent leaders—Latimer, Ridley and others. Under Elizabeth, who succeeded Mary, Protestantism was again restored, and Catholicism has since then been subordinate to the Puritans and Established Church of England in its public influence. In Ireland, however, Catholicism has held a prosperous sway.

The Reformation, beginning in 1517 by Luther, himself a Catholic monk, greatly injured Catholicism by its assaults upon several of the distinctive Catholic doctrines; and extending throughout Germany, Switzerland and France, led to the introduction of a vigorous Protestantism in those countries. John Calvin, in the same century, becoming dissatisfied with the doctrines of Catholicism, in which he had been educated, also became noted as a reformer and a Protestant leader.

The countries in which Catholicism mostly prevails at this day are Austria, France, Spain, Italy, Ireland, Portugal, Mexico and all the countries of South America. They have also many missions and a large number of believers in other countries.

In the United States, where the Catholic religion was first established (in Maryland) in 1623, there was, in 1876, computed to be a membership of 10,000,000.

The Christian Fathers.—These were the first and most eminent writers of the Christian church. Those of the first century are styled the "Apostolical Fathers;" those of the first three centuries, prior to the religious council at Nice, "Antenicene Fathers," and those who flourished subsequently, "Post-nicene Fathers." None of their writings are to be considered as inspired in the sense in which that word is applied to the Christian Bible. The following is a complete list of these fathers; Barnabas, Clement of Rome, Hermas, Ignatius and Polycarp lived in the days of Christ's apostles; Papius, A. D. 116; Justin Martyr, 140; Dionysius of Corinth, 170; Tatian, 172; Hegesippus, 173; Melito, 177; Irenæus, 178; Athenagoras, 178; Miltiades, 180; Theophilus, 181; Clement of Alexandria, 194; Tertullian, 200; Minutius Felix, 210; Ammonius, 220; Origen, 230; Firmilian, 233; Dionysius of Alexandria, 247; Cyprian, 248; Novatus, or Novatian, 251; Arnobius, 306; Lactantius, 306; Alexander of Alexandria, 313; Eusebius, 315; Athanasius, 326; Cyril of Jerusalem, 348; Hilary, 354; Epiphaneus, 368; Basil, 370; Gregory of Nazianzen, 370; Gregory of Nyssa, 370; Optatus, 370; Ambrose, 374; Philaster, 380; Jerome, 392; Theodore of Mopsuestia, 394; Ruffinus, 397; Augustine, 398; Chrysostom, 398; Sulpitius Severus, 401; Cyril of Alexandria, 412; Theodoret, 423; and Germanius, 494. Their writings are principally valuable as proofs of the existence and authenticity of the New Testament, extending back, as they do, to the time of the apostles.

THE CHURCH OF ENGLAND.

THE Church of England, which is Episcopal in government, the most prominent Protestant organization in England, was founded in the reign of Edward VI., King of Great Britain, in the sixteenth century. Christianity, however, both Protestant and Catholic, had a previous existence in the nation. Eusebius, an ancient writer, positively declares that it was introduced into Britain by the apostles of Christ and their disciples.

Its Government.—The reigning sovereign is the head of the church, with supreme power. There are two archbishops—of Canterbury and York—and twenty-five bishops. These bishops rank as temporal barons, so that each has a seat and a vote in the House of Peers in Parliament. Other prelates in the church are designated as deans, archdeacons, rectors, vicars; etc. The archdeacons possess authority next to the bishops, and are sixty in number. They look after church property, reform abuses, excommunicate members, etc. Rectors have charge of the parish churches, and vicars seem to be supernumerary overseers of parish affairs.

Belief.—The church expresses its Protestant christian faith in the Apostles', Nicene and Athanasian creeds. The first of these is as follows:

"I believe in God the Father Almighty, Maker of heaven and earth, and in Jesus Christ, His only Son, our Lord, who was conceived by the Holy Ghost, born of the Virgin Mary; was crucified, dead and buried. He descended into hell. The third day He rose from the dead. He ascended into heaven; and sitteth on the right hand of God: from thence He shall come to judge the quick and the dead. I believe in the Holy Ghost; the holy catholic church; the communion of saints; the forgiveness of sins; the resurrection of the body, and the life everlasting."

This creed is also accepted by the Methodist, Episcopal and Roman Catholic Churches. The Nicene creed, a formula adopted by a convocation of Bishops at Nice in A. D. 325, is more elaborate, but accords with this; while the Athanasian, a creed formulated by Athanasius, Bishop of Alexandria, in the fifth century, is a sublime exposition of the two-fold, God-man nature of Jesus Christ.

Besides these creeds are the "Thirty-nine Articles" of belief, which may be thus summarized: A profession of faith in the Divine Trinity; the incarnation of Jesus Christ, His descent into the place of departed spirits—the "hell" of the creed—His resurrection and the divinity of the Holy Ghost. An acceptance of the canonical books of the Bible as the word of God. A belief in the creeds of the church. Declarations of the doctrines of original sin, of justification by faith in Christ alone, of predestination, etc. The church declared to be the assembly of the faithful. Rejection of the Roman Catholic doctrines of purgatory, the mass, the sale of indulgences, the adoration of images, the change of the wine and bread in the sacrament to the real blood and body of Christ, and the invocation of saints. Only those lawfully called may preach or administer the sacraments of baptism and the Lord's supper. Requiring the form of worship to be in the English language. Declaring that the sacraments are effectual signs of grace. Permitting the marriage of the clergy. Maintaining the efficacy of excommunication, and indorsing the power of the civil magistrates.

The Liturgy of the Church.—The Book of Prayer now in use in the Church of England was composed in 1547, and has since undergone several alterations. It breathes a true devotional spirit in its petitions and psalms of praise, indicating the deep piety of its authors.

The Episcopal Church in the United States.

Origin.—This church derives its doctrines, liturgy and practices almost wholly from the Church of England. The changes in all are rather circumstantial than material, and were made after the war of the Revolution had separated the American colonies from the rule of Great Britain. It, however, differs from the mother church in being distinct from the state government, and its bishops enjoy no civil powers, immunities or emoluments on account of their office.

The Worship.—This is essentially the same, with some verbal improvements, curtailments, etc. The Apostles' and the Nicene creeds are retained, but the Athanasian is rejected. In baptism the sign of the cross may be omitted at pleasure. The marriage service is shortened. The prayers for the rulers of the nation were also changed to meet the exigencies of the new government.

The Episcopacy.—Bishops, priests and deacons, wardens, and vestrymen, comprise the government. The bishops govern about fifty-five dioceses in the United States and Territories, with several in charge of missions in Africa, China and Japan. General conventions of bishops, clergy and laity meet once in three years. Bishops are elected in annual diocesan conventions, and ratified or rejected by a majority of the standing committees of other dioceses. Clergymen are educated at Episcopal universities in several states, and "called" wherever it may happen. In 1873 there were 49 dioceses, 2,700 parishes, 2,938 priests and deacons, and about 248,000 communicants.

HISTORY AND BELIEF OF THE BAPTISTS.

SOME writers of this denomination trace its origin to the first century, with John the Baptist as its exemplar, and Jesus Christ as its founder, thus giving it the basis and dignity of a first Christian church. Others again trace their history in a succession of pure churches, essentially Baptist, though under various names, from the third century down to Luther's Great Reformation. These churches were the subject of bitter persecution from and after the fifth century onward, from the religionists of the East and the West. Among the early persecutors of the German Baptists were Pope Innocent I., and Cyril of Alexandria, by whom they were driven from their houses of worship into secret places, and threatened with death, under ancient laws which forbade rebaptism, so-called. Thus they were scattered, but in the first dawn of the Reformation their principles reappeared among the Culdees, of the West, and several sects, including the Waldenses and Albigenses. Prominent in the results of the Reformation the German Baptists applied its doctrines to the social positions of life and threatened "an end to priestcraft and kingcraft, spiritual domination, titles and vassalage." But they were overcome with foul reproaches and arrogant scorn, and thousands of German Baptist peasants perished for their principles. In England, from the time of Henry VIII. until that of William III., a full century and a half, the Baptists struggled against intense opposition in their efforts to obtain liberty of conscience for all. But until the Quakers arose they stood entirely alone in this attempt to secure the "soul-liberty" of the subject. In Cromwell's time, however, they succeeded in obtaining a fair hearing, and made progress under the leadership of Milton and Vane, but were betrayed by one Monk. In the time of Charles II. the prisons were filled with their confessors and martyrs, but their principles continued to gain adherents among the people, and hastened the religious revolution of 1688. It is claimed that to the Baptists English constitutional liberty owes a debt that it can never fully repay. Among them "christian" freedom found its earliest, its staunchest, its most consistent and its most disinterested champions."

Religious Belief.—The Baptists, with the generality of christian denominations, believe in the Divine Trinity of Father, Son and Holy Ghost, as one Supreme Being, Creator of all things, Savior of all men who believe in the Lord Jesus Christ and His atonement for sin, and the sanctifying, enlightening and comforting influences of the Holy Ghost on the souls of men; the spiritual unity of the whole believing church under Christ, its head, and in the duty of making this unity visible by subjection to Him in all things. They differ from other denominations, however, in persistently refusing to acknowledge any baptism complete and satisfactory except that which immerses the entire body of the disciple in water; rejecting, rigidly, all other forms and methods of performing this important rite. Baptism, to them, is an essential means of grace. While they do not believe in the baptism of infants of an irresponsible age, and consider spiritual qualification necessary, they baptize all who repent and believe the gospel, whether in childhood, youth or manhood, and frequently whole households are thus engrafted on the church of Christ. The majority also exercise a rigid regulation in their churches that no person who has not been baptized by immersion shall be permitted to partake of the bread and wine in the sacrament of the Lord's supper. This prohibition, however, has led to divisions, and the doctrine of a more liberal communion is by some now strenuously advocated.

Government.—The church government of the Baptists is democratic, or congregational. Each church being considered entirely dependent on Christ, is entirely independent of all others, and complete in itself for the choice of its officers, declaration of faith, and the reception, dismissal or discipline of its members. The principle of inter-communion of the churches, however, is maintained as the highest form of visible unity, and should never be interrupted. They therefore associate their churches, invite councils for advice, and organize societies for mutual co-operation in benevolent, educational or missionary enterprises; but no association claims any jurisdiction over individual churches. No distinction except that of office is made between clergymen and laymen. They recognize no higher church officers than pastors and deacons. Elders, as evangelists and missionaries, are, after due trial, ordained and sent out to preach the gospel. Councils are usually called to ordain ministers, form churches and settle serious difficulties.

Branches.—In England there are two parties, known as Particular and General Baptists, having but little communication with each other. The latter maintain the doctrine of general redemption and the other points of the Arminian system, and are agreed with the Particular Baptists only on the subject of baptism, worship and church discipline. The Particular Baptists are the most numerous, and embrace the Calvinistic doctrine of particular redemption, or election. The Scottish Baptists differ in various respects from the English Baptists, and many divisions exist among them on doctrinal points. In the United States there are several different branches of the Baptist church,—the Seventh-Day (or Saturday observers) Free-Will, Anti-Mission, the Six-Principle, Tunkers, Mennonites, Campbellites and Church of God. The Six-Principle, Mennonites and Tunkers are of foreign origin, and are largely composed of immigrants from England, Russia, etc., driven from their native lands by persecutions.

American Baptists.—Roger Williams founded the first Baptist church in America, at Providence, R. I., in 1639, and it is now, with one exception, the largest denomination of evangelical christians, having a foothold in every State and Territory. They have been a prosperous people, and have done much for the cause of education. They have about thirty colleges, more than one hundred academies and female seminaries, and nine or more theological schools, besides numerous publication houses in several cities of the Union, and supporting nearly fifty denominational periodicals. Their mission work is very large, extending to Canada, Oregon, California, New Mexico and Hayti; in France, Spain, Germany, Denmark, Sweden, and Norway; in Africa, India, Siam and China. In doctrine the Baptists of the United States are Calvinistic, with much freedom and moderation. The total population attached to Baptist views is estimated at 8,000,000, and the increase is very rapid.

THE PRESBYTERIAN CHURCH.

THE principles of Luther's Reformation found their way into Scotland about the year 1527, where they excited the apprehensions of the Catholic priesthood and led to a series of persecutions upon those who professed the Protestant faith. Indeed, from the first dawn of the Reformation in Scotland, for a long series of years, there was a perpetual struggle between the court and the people for the establishment of an Episcopal or Presbyterian form of worship and church government. The celebrated house of Stuart advocated the former system, but the latter was supported by a majority of the people, perhaps because, as was not the case with Episcopacy, the laity and the clergy participated together in church jurisdiction.

The first adherents of this form of church government in England were those Protestants who returned from Germany, to which place they had fled for refuge in the time of Queen Mary. Coming back in the generous reign of Queen Elizabeth, they first met in private houses, and afterwards more publicly, to worship in the forms of the Genevan service book. The first Presbyterian place of worship was erected at Wadsworth, in Surrey, where they also formed a presbytery. Other presbyteries were soon established at other points, and in a short time the number of Presbyterians in England is said to have reached 100,000. In Cromwell's administration the famous Westminster Assembly, consisting of 150 ministers, was held. The hope was that Presbyterianism would be made the established religion of England by act of Parliament; but a law was passed, granting freedom of thought and worship to all the people, a measure that much displeased the Presbyterians.

Charles I. attempted to assimilate the churches of England (Episcopal) and of Scotland (Presbyterian), but his overtures were met with a fierce and angry revolution on the part of the latter, which forms an important chapter in the history of Great Britain. Episcopacy was, however, re-established in Scotland by Charles II. The Presbyterians, not dismayed, maintained their ground. Subsequently an arrangement was effected by a treaty of union, in 1707, continuing Episcopacy in England and establishing Presbyterianism as the religion of Scotland.

To John Knox, the celebrated and intrepid reformer, the church of Scotland owes much. For twelve months, after coming fresh from the Reformation in Switzerland, he labored actively and successfully to strengthen the cause of Protestantism in Scotland. From the time of his second coming, in 1559, until his death, in 1572, the reformed church was triumphant.

Government.—The primary doctrine of the Presbyterians is the representation of congregations in presbyteries, etc., by their delegated elders, of whom the preaching elder, or minister, is always one. This system of church representation is partly founded on the example of the apostles in the primitive church, as set forth in Acts xv., and partly on the general unity of the church. Particular congregations confide the management of their affairs to a court called "the session," which consists of the minister and the other elders, the minister presiding, but each member having equal power and an equal vote. From the decisions of this court, appeals may be taken to the presbytery, which usually comprises the ministers of a certain number of congregations and one ruling elder from each congregation. Beyond this appeals may be carried to the higher governing bodies—the synods and general assemblies. The general assembly is the highest court, to which the synods are subordinate. An order of deacons, for the furtherance of its secular affairs, exists in some churches, while in others their duties devolve on the elders. The whole care of the flock is intrusted to the teaching elders and the ruling elders.

Whatever difference may exist in the names of the several judicatory bodies among the different branches of the church, as well as in minuter arrangements, yet any church embodying the above principles is strictly a Presbyterian church.

Religious Belief.—The Church of Scotland possesses no liturgy, no altar, no instrumental music, no sacred vestments. It condemns saint-worship; observes no festival days; uses extemporaneous prayer; teaches that all its ministers are equal in commission, and that bishops and presbyters are the same in office; baptism is performed by sprinkling, and includes infants; and the ring is omitted in the marriage service; believes in the doctrine of spiritual election, and otherwise indorses the ordinary beliefs of orthodox christianity, the atonement of Christ, etc. Calvinism maintains the doctrine that God has chosen certain persons to be saved from His wrath for sin, in His free love and grace, without the least foresight of faith, good works or any condition performed by the creature, and that the rest of mankind will be eternally tormented.

The English Presbyterians are less attached to Calvinism than the Scotch, and differ somewhat from them in their church government, with more latitude of religious sentiment.

In the United States.—Presbyterianism was introduced into Maryland in the seventeenth century by Francis Makemie, who gathered the scattered elements of that religion in that State, who were immigrants from Scotland and the North of Ireland. The Presbytery of Philadelphia (the first) was constituted in 1704. In 1716 four presbyteries were formed, with the Synod of Philadelphia. They were not harmonious, but all differences were settled in 1758. The first general assembly was convened at Philadelphia, in 1789. Since then Presbyterianism has greatly prospered in this country. The original doctrines of the church in the United States were Calvinistic, but were followed in moderation. From an early day new organizations from secessions have sprung up and attained importance, with some changes in doctrine and government.

The Cumberland Presbyterian church originated in Kentucky toward the close of the last century, and is now a large and influential organization. The United Presbyterian church of North America was organized in 1782, from the Associate Reformed and the Associate Presbyterian churches. The union of these churches caused another dissension, which resulted in the foundation of the Reformed Presbyterian church in America.

General Council.—In London, July 21, 1875, a conference of one hundred delegates from such Presbyterian bodies throughout all the world as acquiesced in a plan previously promulgated, called an "Alliance of reformed churches throughout the world," and formed an inorganic and co-operative, voluntary union, to promote mutual sympathy and help, diffuse information, aid in mission work, promote christian reform in appropriate spheres, and oppose infidelity and religious intolerance; no interference with the status of the constituent churches, assuming no church authority, and requiring no changes of doctrine.

The Cumberland Church.—When the Cumberland Presbyterians organized, they indorsed the doctrines of the American Presbyterian church, except "the fatality of predestination" (Calvinism) and the requisition of an academical education for the ministry.

Elsewhere.—Presbyterianism has also a firm foothold in Canada and Ireland.

The New Lights.—An important division occurred in the United States in 1838, whereby the American Presbyterian church was divided into two great sections, commonly known as the Old School and New School Presbyterianism. The first maintained strong Calvinistic doctrines; the latter a modified indorsement of the same tenets. Both churches prospered and extended over the whole country, instituted and supported missions in various heathen lands, and finally, in 1869, they reunited.

THE CONGREGATIONAL CHURCH.

CONGREGATIONALISM, a system of church government which was originally designed to be used by several denominations of Protestant christians, maintains that each congregation of worshipers, meeting regularly in one place, is a complete church, formed by the free consent and mutual agreement of its members, adopting its own rules of government, and is subject to no control from other churches.

This system was originated in the time of Queen Elizabeth, from the desire of certain members of the Church of England to establish a purer church, and determined, at all hazards, to enjoy the rights of conscience. On this account they were stigmatized with the general name of "Puritans," and since then they have been generally known by that name. The Congregationalists of the United States, but first in New England, are the descendants of this people.

History.—The first recorded organization occurred in England in 1583, under the auspices of one Robert Browne; but it is thought that churches had been previously founded on these principles as far back as in the days of Edward VI. and Queen Mary. Browne's church, however, was soon broken up, and he and many of his congregation fled to Holland. There he re-established the organization, but it fell into dissensions after his return to England and soon dissolved. In England the system was also separated by the opinions of its adherents. Some continued to recognize the Church of England as a true church, and refused to leave her, but demanded that her discipline should be reformed, and her bishops rank as the heads of the presbyters, nor did they recognize the doctrine of the liberty of conscience. These were known as the Conforming Puritans. The others, or Non-Conformists, would enter into no compromise with the Established Church. They desired its utter overthrow, with all its machinery, ceremonies and forms, and to build upon its ruins churches after the pure and simple model of the first christian apostles. At least five of the Non-Conformists were executed by the government for openly advocating their principles. In addition, in 1592, an act was passed imprisoning and banishing from the kingdom all of discretionary years who should embrace the doctrines of the Non-Conformist or refuse to attend the services of the Established Church. In consequence of this law a number of the proscribed people went to Holland—how many is not known, but the Dutch treated them with little favor, owing to prejudices derived from the slanders of English prelates. In time, however, these bad impressions were removed, and churches were established in several cities of Holland, where they continued to flourish for more than one hundred years.

At the time of the passage of the act of banishment, in England, it was estimated that there were 20,000 Non-Conformists in the kingdom. Those who remained in England were subsequently treated with more kindness and allowed greater liberty of conscience during the latter part of Queen Elizabeth's reign. In the reign of her successor, James VI., a new series of acts was passed by which conformity to the Established Church was rigidly enforced, on pain of excommunication. Thus the Puritans were silenced, and many sought relief in flight.

Among others who fled from the country amid painful persecution was one John Robinson, a Non-Conformist minister, and part of his congregation, from the North of England. Going to Holland, about the year 1608, they remained at Leyden for about ten years, during which they prospered and the church increased.

In America.—In 1617, owing to the contaminating influences of society in Holland, Mr. Robinson and his friends meditated a removal to North America, where in the wilds of that new country they hoped to be instrumental in converting the native savages and securing the broadest liberty of conscience. Negotiations were begun with the colony of Virginia, but the liberty of conscience that they so much desired could not be assured to them there.

In 1619 a grant of land in America was obtained, but as ships enough could not be procured to convey the entire Holland church across the Atlantic, Mr. Robinson and a part of his congregation remained at Leyden, while the others, under Elder Brewster, sailed. Discouraging circumstances twice caused them to return, but at last, in the Mayflower, one hundred succeeded in landing at Plymouth, in Massachusetts, December 22, 1620. Ten years they struggled against serious hardships and adverse circumstances, but then and there and subsequently they established the present Congregational Church of America—a church that has given to the world some of its most talented and pious divines, materially aided in forming the best and greatest of our national institutions, and done much in framing the character of the American people.

Present Form of Government.—The Congregational form of church government was in effect, if not altogether in name, established in Massachusetts and in New England generally. With it any body of men united together for religious worship constituted a church, perfect and complete in all its parts. From this principle the whole system may logically be deduced. It is a voluntary union, leaving each church (self-created, in one sense) independent of every other, except so far as it is bound by those laws of christian intercourse which govern societies equally with individuals. It can elect its own officers, admit and exclude members at will, and whatever the Bible recognizes as coming within the province of a christian church. The only church officers now recognized by the Congregationalists are pastors and deacons, the office of elder having been dropped more than a century ago. Deacons are chosen by the votes of the church, and generally they are ordained by the imposition of hands. To dismiss a pastor, a mutual council of ministers of neighboring churches is commonly called. The power of licensing pastors is now generally intrusted to associations of pastors, which embrace all within certain local limits. The ordinary meetings of these associated pastors are for personal improvement, mutual counsel and advice. This denomination is one of the most prosperous in the United States.

Religious Belief.—Implicit reliance on the christian scriptures is an essential part of their faith and polity, and no doctrine not found therein is to be received. Calvinism exists as a prominent feature with the usual orthodox beliefs, infant and adult baptism by sprinkling, the sacrament of the Lord's supper, to be partaken of by all christians present, etc.

THE METHODISTS IN ENGLAND AND AMERICA.

A LOW state of religion and morality prevailed in England in the early part of the eighteenth century. In 1729, John Wesley, now famous as the founder of Methodism, and then a presbyter in the Church of England, with his brother Charles and two others, set apart certain evenings for reading the original scriptures and prayer. Their little circle was subsequently increased by the admission of four others, one of whom was afterwards the celebrated evangelist, George Whitefield. Their sphere of work was then extended to visiting prisoners, and the sick poor in the town; and their private meetings, further enlarged by new members, became more religious. They now numbered fifteen, "all of one heart and one mind" in piety and charity, and were irreverently called the "Godly Club," and afterwards "Methodists."

In the latter part of 1739, eight or ten persons came to Mr. Wesley in London, "who appeared to be deeply convicted of sin and earnestly groaning for redemption." With these he formed the first Methodist class-meeting. They met every Thursday evening, and, soon growing in numbers, they then and there received such advice from Mr. Wesley as he judged was most needful for them, and engaged in devotional exercises. This was the origin of that world-wide denomination now known as Methodists, which, whatever peculiarities distinguish its several branches, remains essentially in doctrine and government very much as Mr. Wesley established it.

History.—Mr. Wesley, in 1735, visited America in the furtherance of his project of establishing the principles of a pure religion, but met with no flattering success, and returned home. In 1738 Rev. George Whitefield also came to America, and by the brilliancy of his oratory and influential presence created a remarkable enthusiasm in the religious world. Whitefield returned to America seven times, preaching along the Atlantic coast, visiting Georgia, the Carolinas, Maryland and Virginia and the Bermudas; but while he labored successfully in the cause of benevolence, he established no separate congregations. On some points of belief he and Mr. Wesley differed.

After a prosperous growth in England, Methodism was introduced as an organization into the United States about 1766, when a few Methodists from Ireland settled in New York. Preachers were sent over by Mr. Wesley, and in 1773 the first regular conference was held in Philadelphia. Eleven years later American Methodism became independent of the English organization, and Thomas Coke and Francis Asbury were commissioned as bishops in America by Mr. Wesley, and they were so received. Before the close of the century Methodism had extended westward to the Mississippi river, into Canada, and prospered in New England. In 1812 its members had increased to more than 195,000, with nearly 700 preachers. It introduced the Sunday-school into this country, established a publishing house, and took advanced ground in the cause of temperance.

The Government.—The general conference meets once in four years, and is composed of clergy and lay delegates from all dioceses. It elects bishops, missionary and educational secretaries, book-agents and its periodical editors, and is the final court of appeals; tries bishops and cases of appeal from the annual conferences. The annual conferences are held in each diocese, and presided over by a bishop, the bishops not being confined in their ministrations to any one diocese. This conference consists of traveling preachers, whom it locates, and over whose characters and labors it holds supervision. The district conference is controlled by the presiding elder of the district, pastors, local preachers, exhorters and one steward, and the Sunday-school superintendent from each pastoral charge. It licenses local preachers; and commends them for ordination or admission, and looks after the financial, educational and benevolent interests of the district. The quarterly conference consists of the pastor, local preachers, exhorters, stewards, class-leaders, trustees and Sunday-school superintendents of a single pastoral charge, over which it has supervision. The class-leaders and stewards usually hold a meeting for each church once a month, presided over by the pastor, and care for the sick and needy, guard the discipline of the members, recommend persons for membership and for license to exhort. Each church is also divided into classes under pious leadership, who meet weekly for testimony, prayer and counsel as to their spiritual welfare. The ministry consists of bishops and traveling preachers, the latter being obliged to change their charges every three years. The bishops preside over the annual and missionary conferences, station the ministers, arrange the preaching districts, etc.

Methodism in the United States.—The Methodist Episcopal Church of the United States is divided into two sections, North and South, with separate jurisdictions and controlling interests, but similar to each other in executive powers and divisions. Both are thrifty institutions, and have large memberships, and their many educational, publishing, benevolent and missionary institutions exert a wide influence on the prosperity of their respective sections.

Branches.—The church, both in England and America, has, from time to time, experienced secessions and the formation of new organizations, with more or less important changes in discipline and points of doctrine. In Great Britain we have the Wesleyan (original) Methodists, the Calvinistic, the New Connection, the Primitive, the United Free, the Bible Christian and the Irish Primitive Methodists, with several minor divisions. In America, besides the main divisions of a North and South church, there are the African Methodist Episcopal, the Methodist Protestant, the Wesleyan Connection, Canadian Methodists, the Evangelical Association, the United Brethren in Christ and the Free Methodists.

Religious Belief.—Faith in the Holy Trinity as one God; the combined divine and human natures of Christ, who suffered, was crucified, dead and buried, in order to atone for the sins of men; who rose again from the dead, and ascended to heaven as the Mediator between God and man, to return again as the Judge of men at the last day; the divine identity of the Holy Ghost with God; the sufficiency of the holy scriptures for all necessary instruction as to salvation; the doctrine of original sin maintained; man's free will to turn to God for salvation declared; man justified alone by faith in Christ as the only and all-sufficient Savior; good works of no value beyond testifying to one's faith, and in that case pleasing God; sin, repentance and forgiveness may follow one's first conversion from sin; the visible church of Christ found in his faithful followers; denial of the doctrine of purgatory, worship of images, etc., public service to be carried on in the common language of the people, the sacraments of baptism and the Lord's supper not saving ordinances; infant baptism permitted; masses declared to be blasphemous and deceitful; permitting the marriage of ministers; changes in rites or ceremonies permitted; recognition of the civil government of the United States declared; a community of goods in the church denied, but the duty of almsgiving urged; the nature and righteousness of a christian man's oath in court justified. These are the main principles of the Methodist church, whose "general rules" require a strict and pious observance of public and private duty in common life, touching our own and our neighbor's welfare. These general rules forbid doing harm or evil of any kind, such as profanity, sabbath-breaking, drunkenness, buying and selling slaves; fighting, quarreling, returning evil for evil, lawsuits, bantering, dealing in smuggled goods, taking usury, uncharitable and unprofitable conversation: speaking evil of magistrates or ministers; doing to others what we would not wish them to do to us, wearing gold ornaments and costly apparel: unholy amusement, singing secular songs or unprofitable books; softness of living and self-indulgence; laying up treasure on earth; borrowing without a probability of paying; requiring members to evidence their desire for salvation by doing good to all men, exercising mercy and charity, by being diligent and frugal; attending public worship, hearing or reading the Bible; partaking of the Lord's supper, praying in private and in the family; searching the scriptures, and by fasting or abstinence.

THE UNITARIAN DENOMINATION.

HISTORY.—The Unitarians trace the history of their doctrines back to Arius, a liberal bishop who lived in Alexandria in the fourth century. In 1825 the British and Foreign Unitarian Association was founded. It is devoted to the dissemination of Unitarian literature; and the promotion of missionary efforts, philanthropy, etc.

In America.—From the early settlement of New England, the doctrines of Unitarianism were manifest. In 1815 the discussion between Dr. Channing and Dr. Worcester resulted in the separation of the Unitarians from the Congregationalists, and the establishment of a distinct sect of the former. This movement was followed by the secession of a large number of Congregationalist ministers and churches to the Unitarian fold from Boston and its vicinity, and Harvard College passed into their hands. Since then Unitarianism has widely spread and prospered in Great Britain and the United States, and in other parts of the world. Its advocates number many talented and popular preachers and writers, and it has originated numerous educational institutions. Persecution followed it in Hungary and Transylvania for a while, but it has since then increased its influence, especially in the latter country, where they number about 60,000 or more.

Religious Belief.—The Unitarians believe that there is but one God, the Father and Creator of all men, who is superior in might and government to all other beings, having no equal. They consequently deny Christ was himself divine, but admit that his disposition and life partook of the divine nature. They reject the doctrine of total depravity, moral inability and the necessity of a vicarious atonement for sin. Some individuals accept the doctrine of the fall of Adam, but deny its power to destroy the inbred rectitude of human nature, while others do not totally reject the redeeming office of Christ, and others again confine His mission on earth to that of an exemplar and a teacher. Unitarianism beyond this has no creed to bind its followers. It recognizes the rites of baptism and the Lord's supper. It is liberal in all things. Christmas and Easter are commonly recognized as festivals. Some regard the christian gospel as a means of redemption for the human race, and others recognize it as an exponent of natural religion, with precepts, truths, laws, etc., tending to exalt the individual life. The Unitarians claim fellowship in belief with the Jewish tenet of one God, to which they say that the teachings of Christ and His disciples in the New Testament strictly conform. Controversies in the early church, they claim, impaired this belief and made way for the opposite doctrine of the Holy Trinity.

THE UNIVERSALISTS.

THE Universalists claim that their peculiar doctrines may be found outlined in the writings of the early christians, especially in the "Sybilline Oracles," which taught the doctrine of the final restoration of lost souls, and that Clement, Origen and others advocated the same doctrine. Universalism is traced in strength in Europe, through the fifth, twelfth, fourteenth, fifteenth and sixteenth centuries. In England it received the sanction of eminent members of the Established Church, and is now widely spread in European nations and America.

Since the arrival of Rev. John Murray in the United States, in 1770, it has spread here with great rapidity, having a place in most of the states, with a large membership, numerous important educational institutions, periodicals, etc.

In England Universalism was organized about 1750, in the city of London, under the preaching of Rev. John Kelly, who held, with his congregation, to a modified form of the doctrine of the Trinity, which gives to Universalism in that country a character that it does not possess in the United States. The Unitarians in England are generally Universalists in sentiment and preaching, and all, or nearly all, Universalists who embrace the doctrine of the divine unity combine with the Unitarians, so that the Universalists, as a *denomination*, do not increase as rapidly as in the United States.

Religious Belief.—In the General Convention of the United States, held at Winchester, N. H., in 1803, the following profession of faith was formed and published:

"We believe that the holy scriptures of the Old and New Testaments contain a revelation of the character and will of God, and of the duty, interest and final destination of mankind.

"We believe there is one God, whose nature is love; revealed in one Lord Jesus Christ, by one Holy Spirit of Grace, who will finally restore the whole family of mankind to holiness and happiness.

"We believe that holiness and true happiness are inseparably connected; and that believers ought to maintain order and practice good works, for these things are good and profitable unto men."

As the principal doctrine that distinguishes the Universalists from other christian believers is the final restoration of mankind to eternal holiness and happiness, the following extended article of faith will perhaps throw light upon the *reasons* for this belief:

"Believing that the scriptures of the Old and New Testaments are profitable for doctrine, reproof, correction and instruction in righteousness, that the servant of God may be thoroughly furnished unto good works, and whoso that properly readeth them becomes wise unto salvation, we do most devoutly believe that every promise and every threatening made in them and relating to a period yet future will be fully performed and completely fulfilled, to the honor, glory and praise of God, and to the benefit, satisfaction and final salvation of man. We do not, therefore, believe that the law (or threatenings) is against the gospel (or promises), for the promises were first made unto Abraham, and the law was given to Moses 430 years afterwards, not to *annul*, but to *confirm*, the promises. Therefore will all chastisement but tend to produce the blessings promised for all the nations, families and kindreds of the earth, in Christ, the chosen Seed."

They also teach, and constantly enforce in their preachings and writings, that salvation is not shelter nor safety, nor escape from present or future punishment. It is inward and spiritual, and not from any outward evil, but deliverance from error, unbelief, sin, the tyranny of the flesh and its hurtful lusts into the liberty and blessedness of a holy life, and supreme love to God and man. They urge on all to seek salvation, not from the torments of a future hell, but from the present captivity and sin. No one is wholly saved in this life, but all men are saved, in a greater or less degree after death; in other words, that man's probationary state will continue until Christ shall have fully completed His work of redemption and surrendered His kingdom to the Father.

Government.—The government of the Universalist church is ecclesiastical and congregational, the United Convention being the final court of appeal in all cases of fellowship and discipline.

The Denomination of Quakers.

Government and Belief of the Quakers.

THE religious society of Friends, commonly called Quakers, was originated in England, about the middle of the seventeenth century, by George Fox, a shoemaker, who was much given to meditation. Considering the low state of religion among the people, and their worldly-mindedness (he himself having always led a religious life), he became troubled because the teachings and practices of the Established Church, in which he was reared, did not give to its members that victory over sin which the gospel enjoins. He withdrew into retirement and studied the scriptures, with a desire rightly to understand them. Some time afterwards he commenced his labors as a preacher, traveling through England mostly on foot, and refusing all compensation for his preaching. His earnestness, piety and Bible teachings were crowned with gratifying success, and in a few years a large number of persons had embraced the doctrines which he preached. His success, however, was attended with a series of severe persecutions from the priesthood of the Established Church and its adherents, but his doctrines grew in favor with the people. In Cromwell's time he first despised the Foxites; and subsequently he endeavored to purchase their influence, but in this he failed; they were above corruption.

In a few years meetings were established in nearly all parts of Great Britain, and although the Friends were subjected to extensive individual persecution, whippings, imprisonment, loss of property, etc., their numbers continued to increase, so that their religion flourished in Holland and other countries.

In America.—About the year 1655, the first Friends arrived in America, at Boston, and began their religious labors among the people, many of whom embraced their doctrines. But the spirit of persecution followed them in New England, as in Old England; various punishments were inflicted upon them, and four suffered death on the gallows for conscience' sake. Yet, as in England, their doctrines widely spread; other Friends came from England, and in 1682 the celebrated William Penn brought more with him and founded his colony in Pennsylvania. At that day, from Boston to North Carolina, along the Atlantic coast, the religion grew and meetings were established.

Why Called Quakers.—It was George Fox's expressed opinion that the scriptures, as the word of God, should be read and heard with quaking and trembling; hence the name "Quakers" soon became attached to this class of worshipers.

Government.—The government of the Quakers is congregational, with Christ as their Supreme Head, as one who is present with them in all their assemblages, by His Spirit. Four grades of meetings are held. A preparative meeting, to prepare business for the monthly meetings; in these the executive department of the discipline is chiefly lodged. Quarterly meetings, which exercise a supervisory care over the monthly meetings, examining their condition, and advising or assisting as may be required. Annual meetings, which include the whole, possessing legislative powers, and annually investigate the state of the whole body. One or two Friends of each sex are appointed as overseers, to labor with offenders, etc. The women, also, have overseers appointed to extend christian care and advice to their own sex. Meetings of ministers and elders are also held, the latter being prudent members of the society, to regulate the conduct of the ministry.

Religious Belief of Quakers.—The Friends believe in the Divine Trinity, as do orthodox christians; in one Almighty, All-wise God, the Creator of all things. They believe in Christ; in His dual nature, and in His redemption, mediation, and advocacy of men. They believe in the enlightening, directing, strengthening, helping and comforting influences of the Holy Ghost. They believe in the fall of man through sin; in man's salvation from sin through the sacrifice of Christ. As many as believe in and obey Christ receive a holy, pure and spiritual birth, bringing forth in them holiness, righteousness, purity and other fruits acceptable to God. They believe in the resurrection of the dead; the eternal blessedness of the redeemed and the everlasting torment of the wicked; the divine inspiration of the scriptures; one baptism; the spiritual nature of the celebration of the Lord's supper; the religious ministry of men and women; silence in the churches, where all sit with their heads covered, and speak only "as the Spirit moves them;" a free gospel for all people; opposition to war, contention and personal violence; the sufferance of injuries without resentment or going to law; the refusal to take any legal oath concerning the truth in courts; the observance of the Sabbath; the opposition to slavery; the submission to human governments; simple and unostentatious modes of living and temperance; forbidding indulgence in worldly amusements or the observance of worldly fashions in dress, language or furniture, and advocating a continual fear of God, with the crucifixion of all worldly lusts; a christian conduct at all times becoming their profession and adorning the doctrine of the Savior in all things.

THE SHAKER DENOMINATION.

THE Shakers, or Millennial Church, was founded by Ann Lee, a seceder from the Friends, or Quakers, an English woman, in the State of New York, principally at Watervliet, eight miles from Albany. She came from Manchester, England, where she had taught her religion. She brought to America with her a brother and also two or three of her proselytes, arriving at New York in May, 1774.

Why Named Shakers.—The name of the society founded by her is derived from the contortions and movements of the body while under an alleged religious inspiration, resembling trembling, followed by a deprivation of strength. Ann's authority was very great, and her teachings forbade the use of ornaments on the person, or of anything to nourish pride, even to the cutting short of the women's hair. Since her death, her followers have flourished and attained an honorable reputation for thrift and industry at Lebanon, N. Y., and other places in the United States.

Where Originated.-The society originated in a secession from the Quakers in England, in 1747. They hold that the revelation of God is progressive, and believe in an eternal "Mother," as well as an eternal Father, and two Christs, male and female, are the progeny of the two great Eternal Beings. They are communistic in their social relations, living in families together; believe only in marriage as a means to perpetuate the race instead of for sensual indulgence, while some reside in isolated family relations; but there is a general commune of property for the benefit of the society at large. There is much of mysticism and spiritism in their religion, with a few doctrines (derived from their own "revelations") that are not to be found in the religion of other sects. They aim to lead holy lives, and provide comfortably for each other in health, sickness or old age. In their ordinary meetings for worship they formerly engaged in a regular dance, jumping, turning round rapidly, falling on their knees, and assuming other similar postures. Sometimes they marched around the room, in order, and in harmony with songs that they sing, shouting and clapping their hands. They also had intervals of shuddering, as if in a fit of ague; but it is understood that the modern Shakers are less violent in their movements than in the olden times.

THE MORAVIANS.

THIS religious sect, known also as the "United Brethren," but not to be confounded with another called the "United Brethren in Christ," assert that they derive their origin from the Greek church in the ninth century. It is also stated that they are a branch of the Hussites, or disciples of the martyr John Huss, who withdrew into Moravia, a province of Austria, in the fifteenth century. Another authority states that the Moravians originated under the teachings of Count Zinzendorf, a German nobleman, who died in 1760. His followers are called Moravians because the earliest of his converts were some Moravian families.

The society itself traces its descent from the old Moravian and Bohemian brethren, who existed as a distinct sect sixty years before the Lutheran Reformation. They also styled themselves *Unitas Fratrum.* Count Zinzendorf came to America in 1741, and preached at Germantown and Bethlehem, Pa. In 1842 he ordained the missionaries, and that same year one of these missionaries carried the gospel among the Indians with good success. In fact, the Moravians have been distinguished for their zeal in establishing christianity among the heathen.

In the early days the Moravians were also called "Hernhutters," from the name of the village where they first settled. In 1749 the British Parliament passed an act which recognized the church of the United Brethren as an ancient Episcopal church. The present constitution of the church was adopted in 1764. The highest legislative authority is the general synod, which meets once in ten years. The executive board of the church, as a whole, is the elders' conference of the unity. Each of the three provinces of the church—the German, British and American—has a synod and board of elders of its own. The spiritual church officers are the bishops, through whom the regular succession of ordination, transmitted to the United Brethren through the ancient church of the Bohemian and Moravian Brethren, is preserved, and who alone are authorized to ordain ministers, but possess no authority in the government of the church, except such as they derive from some other office (most frequently presidents of some board of elders): the presbyters or ordained stated ministers of the communities, and the deacons, the latter being the degree first bestowed upon young ministers. Females may be elders among their own sex, but are never ordained, nor do they vote in the boards of elders. In doctrine the Moravians do not differ from other orthodox or evangelical churches, so far as the main points of christian belief are concerned, although on minor points it allows a difference of opinion. In the past they have lived in distinct communities, and united their interests very closely, but did not hold to a community of goods; nor in their separated communities did they allow householders who were not members in full communion to obtain a permanent residence. Their discipline allowed no balls, dancing or theatrical amusements, and forbade all promiscuous assembling of the youth of both sexes. Public religious meetings were held every evening. On Sunday mornings the church litany was read and sermons were preached. The church festivals of Christmas and Easter were celebrated. Music held a prominent place in their devotions. Previous to partaking of the Lord's supper, they had a "love-feast" of coffee, tea and light cakes, with hymns and instrumental music. Funerals were attended by bands of music, without any external badges of mourning. Such were the customs of the church less than forty years ago. The seat of the provincial board of the American branch of the church is at Bethlehem, Pa., and its educational institutions are located at Bethlehem, Nazareth and Litiz, in Pennsylvania; Salem, N. C., and Hope, Ind. The missionary field includes Greenland, Labrador, North American Indians, the Mosquito coast, certain West Indian and other islands, Surinam, South Africa, Thibet and Australia. On the continent of Europe there is a special mission work, called the "Diaspora," which extends over Saxony, Prussia and other German states, Switzerland, parts of France, Denmark, Norway, Sweden and Russia. In 1875 the whole number of communicants in the three provinces was 17,436, and of all attendants 27,630.

THE SECOND ADVENTISTS.

IN 1833, William Miller, a farmer, of Low Hampton, N. Y., born in 1781, after some examination of the Bible, began lecturing and writing for the press his belief in the speedy and personal coming to the earth, for the second time, of the Lord Jesus Christ, at which time should end the present christian dispensation. The date for the fulfillment of the Old Testament prophecies in regard to this event, computed scripturally and mathematically, he placed at some time about A. D. 1843. Early in 1840, Joshua V. Himes, afterwards an Episcopal clergyman, but then a preacher in the "Christian Connection," became a believer in Miller's views, and began the publication of a bi-weekly paper, devoted to this subject, which attained a wide circulation. The dissemination of this belief created a horde of believers and lecturers, and the excitement became general and intense in various parts of the country. Its effects led to insanity, in many cases, and people who gave away their property, in anticipation of the second advent (after which event they would need it no more) were at last undeceived by the nonfulfillment of the prophecy. Beggary staring some in the face, they committed suicide, as did others prior to the expected date, through sheer insanity.

The year 1843 having passed without any unusual spiritual event occurring, some lost their faith in Miller and Himes, but others, whose enthusiasm was kept up under new calculations, continued, from time to time, to set other dates for the second coming. Notwithstanding the frequent failures of these predictions, Second Adventism has become a religious denomination, having church organizations, and distinguishing principles, and thriving all over the country. Second Adventists are divided into several classes. Some are "timists"—that is, their leaders set particular dates for the second coming, while others do not, but wait patiently for Christ's coming in His own good time. Others again—and there is a large body of these, with an educational institution and other advantages, at Battle Creek, Mich.—observe the Jewish Sabbath, or seventh day of the week, instead of Sunday. The prophecies in Daniel and Revelation are particular favorites in the ground-work of this denomination.

In 1845 a "Mutual Conference of Adventists" was held in Albany, N. Y., and agreed upon associated church action and belief. After commending the formation of christian churches, they state as follows:

Religious Belief.—The Second Advent believers generally throughout the country have united in church fellowship, with no other creed or form of discipline than the written word of God, which they believe is a sufficient rule, both of faith and duty.

Second Advent conferences are held as often as it is deemed necessary, for the consideration and discussion of such subjects and measures as the interests of the cause may demand; they are constituted of both ministerial and lay members, from all portions of the country. This body is purely voluntary and advisory, and claims to exercise no authority over the conscience of any.

They look upon the Advent doctrine, embracing, as it does, the personal and visible appearance and reign of Christ on earth, the restitution of the heavens and earth to their paradisiacal state as the eternal inheritance of the saints, etc., as the only view which will explain and harmonize the word of God.

They believe the second advent of Christ to judge the world to be near at hand, and that is the great practical doctrine set forth and used by the apostles as a motive to holiness. It was to them and their suffering brethren the great source of comfort, and the hope of the whole Israel of God.

The Second Coming.—The early Adventists regarded the second coming of the Lord to be at hand for these reasons:

"1. The four great empires are to be succeeded by the everlasting kingdom of God; and it is very manifest that the last, the Roman government, has passed its predicted divisions, and must soon end.

"2. The waning of the Ottoman or Mohammedan power is regarded as another index that the kingdom of Christ will soon come.

"3. The universal movements and agitations, with the famines, pestilences and earthquakes, together with the signs in the sun, moon and stars, etc., they consider conclusive evidence of the speedy coming of Christ.

"4. This gospel of the kingdom which was to be preached in all the world for a witness to all nations is now completing its work."

Side Doctrines.—Several doctrines have been grafted into the Second Advent organizations, including that which claims that the soul, after death, remains insensible and inactive (sleeping) until the resurrection morn, and that none but the righteous souls will be raised and endowed with immortality, etc.

Government.—At the sixteenth annual meeting of the Advent Christian Association, at Springfield, Mass., in August, 1875, it was resolved to convoke a general conference in order to complete the congregational form of government that has been adopted by this denomination.

The Doctrines of the New-Jerusalem Church.

The Doctrines of the New Jerusalem Church are shown in the following:

I.—God is One in Essence and in Person, in whom there is a distinct and essential Trinity, called in the word the Father, Son, and Holy Spirit, and the Lord Jesus Christ is this God and the only true object of worship.

II.—In order to be saved, man must believe on the Lord and strive to obey His commandments, looking to Him alone for strength and assistance, and acknowledging that all life and salvation are from Him.

III.—The Sacred Scriptures, or the Divine Word, is not only the Revelation of the Lord's will and the history of His dealings with men, but also contains the infinite treasures of His wisdom expressed in symbolical or correspondential language, and therefore, in addition to the sense of the letter, there is in the word an inner or spiritual sense, which can be interpreted only by the law of correspondence between things natural and things spiritual.

IV.—Now is the time of the second coming of the Lord, foretold in Matt. xxiv., and the establishment of the New Church signified by the New Jerusalem in Revelation xxi., and this second coming is not a visible appearance on earth, but a new disclosure of Divine Truth and the promulgation of true Christian doctrine, effected by means of the Lord's servant, Emanuel Swedenborg, who was specially instructed in this doctrine, and commissioned to publish it to the world.

V.—Man's life in the material body is but the preparation of eternal life, and when the body dies man immediately rises into the spiritual world, and after preparation in an intermediate state, dwells forever in Heaven or Hell, according to the character acquired during his earthly life.

VI.—The Spiritual World, the eternal home of men after death, is not remote from this world, but is in direct conjunction with it, and we are, though unconsciously, always in immediate communion with angels and spirits.

The Teachings of Swedenborg.

The delight derived from good, and the pleasantness derived from truth, which constitutes the happiness of heaven, do not consist in idleness, but in activity. Activity with those who are in heaven consists in performing uses, which is to them the delight of good, and in relishing truths with a view to uses, which to them is the delight of truth.

Few at this day know that in doing good without a view to recompense there is heavenly happiness. They who are in genuine mutual love are in their delight and blessedness when they are doing good to their neighbor, for they desire nothing more.

Piety without charity, and external sanctity without internal sanctity, and a renunciation of the world without a life in the world, do not constitute spiritual life; but piety with charity, external sanctity from internal sanctity, and a renunciation of the world with a life in the world, do constitute it.

The life of charity consists in willing well and doing well to our neighbor; in acting from all our works from justice and equity, and from goodness and truth, and in like manner in every office; in a word, the life of charity consists in performing uses.

Piety consists in thinking and speaking piously, in giving much time to prayer, in being humble at that time, in frequenting temples and attending devoutly to the preaching there, in frequently every year receiving the sacrament of the holy supper, and in performing the other rituals of worship according to the ordinances of the church.

Internal sanctity consists in loving goodness and truth for the sake of goodness and truth, and justice and sincerity for the sake of justice and sincerity; so far, also, as a man loves these so far he is spiritual, and his worship too; for so far, also, he is willing to know them and do them.

External worship without internal may be compared with the life of respiration without the life of the heart; but external worship from internal may be compared with the life of respiration conjoined to the life of the heart.

Every man's ruling affection or love remains with him after death, nor is it extirpated to eternity; for the spirit of man is altogether as his love is, and the body of every spirit and angel is the external form of his love, altogether corresponding to the internal form, which is of his mind.

All delights flow forth from love, for what a man loves he feels as delightful, nor has he any one delight from any other source. Hence it follows that such as the love is, such is the delight. The delights of the body, or of the flesh, all flow from the love of self and the love of the world; but the delights of the soul, or spirit, all flow from love to the Lord and love towards the neighbor.

How great the delight of heaven is may be manifest from this consideration, that it is a delight to all in heaven to communicate their joys and blessings to others; and whereas all in the heavens are of such a character, it is evident how immense is the delight there, for in the heavens there is a communication of all with each, and each with all. Such communication flows from the two loves of heaven, which are love of the Lord, and love towards the neighbor; these loves are communicative of their delights.

There are three sorts of dreams. The first sort come mediately through heaven from the Lord; such were the prophetic dreams recorded in the word. The second sort come through angelic spirits; it was thence that the men of the most ancient church had their dreams which were instructive. The third sort comes through the spirits who are near when man is asleep, which also are significative. But fantastic dreams have another origin.

The Sun of heaven is the Lord; the light there is Divine truth, and the heat there is Divine good, which proceed from the Lord as a Sun; from that origin are all things that exist and appear in the heavens. But let no one entertain the idea that the sun of the spiritual world is God himself. God himself is a Man. The first proceeding from His love and wisdom is a fiery spiritual principle, which appears to the sight of the angels as a sun; but when the Lord manifests himself to the angels in person, He manifests himself as a Man, sometimes in that sun, and sometimes out of it.

RELIGIOUS BELIEF OF THE NORTH AMERICAN INDIANS.

THE native Indians of North America believed in a plurality of gods who made and governed the various nations of the world, but made deities of everything that they imagined to be great and powerful, beneficial or hurtful to mankind; still they conceived the idea of one Almighty Being, who is superior to all other deities, and who dwells in the southwestern heavens. Him they call Kichtau, and they believe Him to be a good Being, and pay a sort of acknowledgment to Him for plenty, victory and other benefits. They also worshiped Hobamocko, or the devil, of whom they stood in greater awe, and their worship of him was actuated by fear. They had a universal belief in the immortality of the soul. When good people died they believed they went to Kichtau and dwelt in pleasure with their previously departed friends. The wicked also went to Kichtau, who drove them away, and then they wandered about in restless discontent and darkness forever.

In New Jersey the aborigines believed in three gods, who respectively made white men, Indians and negroes. After death they believed that the spirit or "shadow" of the dead went southward to some unknown place, and enjoyed some kind of happiness, such as hunting, fishing, dancing, etc., and never grew weary of these amusements. This applied to most of the dead, but if any were not happy hereafter, they were punished only by privation outside of the place where the happy spirits dwell. Rewards and punishments had no reference to the worship of the Supreme Being, but to man's conduct towards man.

Other tribes had various ideas of a Supreme God and His attributes, mingled with much of paganism and superstition. The belief in future existence and of rewards and punishments after death were common, and their heaven was full of material delights suited to their rude and savage life on earth. Sun-worship, and idol-worship in many forms prevailed among the numerous Indian tribes, North and South. Sacrifices of living animals were not usual among these Indians.

RELIGIOUS BELIEF OF THE FOLLOWERS OF ZOROASTER.

IDEAS of twos pervade all the religion of the followers of Zoroaster; they believe that there are two lives, mental and physical; two intellects, one the spark from the source of light, and one of earth, which is acquired.

In the eternal warfare which has been waged among the heavenly bodies, the sun assumed the leadership of the stars, and hence the reverence of those believers for the sun.

In the creation of the material world there were twelve companies organized under the twelve signs of the Zodiac, placed in four great divisions—north, south, east and west, with Mars over the north, Mercury over the south, Jupiter over the east, and Saturn over the west, Venus commanding the center. From the world God created a bridge that reached to the source of light, over a chasm of utter darkness.

In due time the spirits of darkness, under the command of the evil one, commenced an attack on the pathway leading to the light, but, after a terrible conflict, the evil spirit was vanquished and fell back to earth in the form of a serpent; hence the antipathy of the followers of this religion to serpents and reptiles.

Having finished the creation of the material world, God created man and woman to inhabit it, who were tempted by the devil to drink goats' milk, which produced libidinous desires, and afterwards brought shame.

Thus made miserable through the sin of the first parents, the human race stands between two worlds, one of light, the other of darkness; between two spirits, good and evil, but able to act of their own free will.

Possessing the spirit of light, mankind ought to worship God, but being surrounded by the spirit of darkness, they are continually tempted to worship evil.

In this condition God sends them Zoroaster with a revelation of His will, which if they believe and obey, it will lead them to light and eternal happiness.

ORIGIN AND FAITH OF THE LUTHERANS.

LUTHERANISM is the system of Protestant religion adopted by the followers of Luther, the celebrated German reformer, but has undergone some changes. Luther opposed the Romish masses, the adoration of the host, confession of sins to the priesthood, the doctrine of good works bringing salvation, the purchase of pleasurable indulgences, purgatory, image worship, Romish fasts, monastical vows, celibacy of the priesthood; maintained the doctrines of predestination and justification solely by the imputation of the merits of Jesus Christ, and reduced the number of sacraments to two—baptism and the Lord's supper. In the latter, however, his followers believe that the body and blood of Christ are materially present in the bread and wine of the sacrament, though in an incomprehensible manner. They also allow the use of images in churches, clerical vestments, the private confession of sins, the use of the wafer in the Lord's supper, the form of exorcism in the baptismal ceremony, and other rites which remind one of the Roman Catholic worship. They more closely resemble the Episcopalians in Sweden, Norway and Denmark. In the United States, Hamburg and Frankfort, the church government is more Congregational, and consists of a vestry, a district conference and a general synod of ministers. They give much attention to educational and missionary enterprises.

PROMINENT RELIGIOUS TEACHERS.

NAMES.	BELIEF.	OCCUPATION.	FIELD OF LABOR.	BIRTHPLACE.	BORN.	DIED.
Aaron	Jewish	First High Priest	Arabian Desert	Egypt	1575 B. C.	1452 B. C.
Abraham	Jewish	Founder of the Jews	Palestine	Ur, in Chaldea	2008 B. C.	1822 B. C.
Andrew	Christian	Christ's Apostle	Palestine	Bethsaida, Palestine		A. D. 62 or 70
Aquinas, Thomas	Roman Catholic	Theologian	Italy	Calabria	A. D. 1224	A. D. 1274
Arius	Greek	Patriarch	Egypt	Alexandria		336
Arminius, James	Arminian	Founder of a Sect	Holland	Onderwater, Hol	1560	Oct. 19, 1609
Asbury, Francis	Methodist	First Am. Bishop	United States	Birmingham, Eng	Aug. 20, 1745	March 31, 1816
Athanasius	Trinitarian	Patriarch	Alexandria, Egypt	Alexandria	About 296	373
Abbot, Samuel	Congregationalist	Merchant	Andover, Mass	Andover	1732	1812
Bartholomew	Christian	Christ's Apostle	Palestine			Not Known
Baxter, Richard	Episcopalian	Preacher-Author	England	Rowton, England	Nov. 12, 1615	Dec. 8, 1691
Beecher, Lyman	Congregationalist	Preacher Author	Conn. and New York	New Haven, Conn	Oct. 12, 1775	Jan. 10, 1863
Beecher, Henry W.	Congregationalist	Preacher Author, etc	Indiana, Brooklyn	Litchfield, Conn	June 24, 1813	Mar. 8, 1887
Bede (the "Venerable")	Roman Catholic	Monk and Author	England	Durham, England	673	735
Boehm, Jacob	Visionary	Mystic Writer	Germany	Goerlitz, Germany	1575	Nov. 18, 1624
Bengel, John Albert	Roman Catholic	Theologian	Germany	Wurtemberg, Ger	1687	Nov. 2, 1752
Berkeley, George	Episcopalian	Irish Bishop	Ireland and America	Kilcrin, Ireland	March 12, 1684	Jan. 14, 1753
Beza, Theodore	Prot. Reformer	Calvinist Preacher	Geneva, Switzerland	Vezelai, Switzerland	1519	Oct. 13, 1605
Blair, Hugh	Episcopalian	Preacher and Author	Scotland	Edinburgh, Scotland	April 7, 1718	Dec. 27, 1800
Boudinot, Elias	Protestant	Patriot, Philanthropist	America	Philadelphia	May 2, 1740	Oct. 24, 1821
Brainerd, David	Protestant	Indian Missionary	N. E. and New Jersey	Haddam, Conn	April 20, 1718	Oct. 9, 1747
Brown, John	Presbyterian	Biblical Critic	Haddington, Scot	Perthshire, Scotland	About 1722	June 19, 1787
Bunyan, John	Baptist	Preacher and Author	Bedford, Eng	Bedfordshire, Eng	1628	Aug. 31, 1688
Burnet, Gilbert	Episcopalian	Bishop of Salisbury	England	Edinburgh, Scotland	Sept. 18, 1643	March 17, 1715
Butler, Joseph	Episcopalian	Bishop and Author	England	Wantage, England	May 18, 1692	June 16, 1752
Brownson, O. A.	Unitarian	Religious Author	New York and N. E.	Stockbridge, Vt	Sept. 16, 1803	April 17, 1876.
Brownlow, W. G.	Methodist	Journalist and Preacher	Knoxville, Tenn	Wythe Co., Va	Aug. 29, 1805	April 28, 1877
Bushnell, Horace	Congregationalist	Preacher and Author	Connecticut	New Preston, Conn	April 14, 1802	Feb. 17, 1876
Calmet, Augustine	Roman Catholic	Bible Commentator	France	Lorraine, France	Feb 26, 1672	Oct., 1757
Calvin, John	Calvinist	Reformer and Writer	France, Switzerland	Picardy, France	July 10, 1500	May 24, 1564
Canne, John	Baptist	Author of Bible References	England	England	Bet. 1590 and 1600	
Carroll, John	Roman Catholic	First American Bishop	Maryland	Upper Marlboro', Md	1735	Dec. 3, 1815
Cartwright, Peter	Methodist	Preacher	Illinois	Amherst Co., Va	Sept. 1, 1785	Sept. 25, 1872
Cheever, Geo. B.	Congregationalist	Preacher and Author	N. E. and New York	Hallowell, Me	April 17, 1807	

NAMES.	BELIEF.	OCCUPATION.	FIELD OF LABOR.	BIRTHPLACE.	BORN.	DIED.
Christ, Jesus	Son of God	Savior of Men	Palestine	Bethlehem, Judea	A. M. 4004	April, A. D. 37
Clarke, Adam	Methodist	Bible Commentator	Great Britain	Moybeg, Ireland	1760 or 1762	Aug. 26, 1832
Cranmer, Thomas	Episcopal	Archbishop of Canterbury	England	Nottinghams'e, Eng.	July 2, 1489	March 21, 1556
Confucius	Moralist	Chinese Philosopher	China	China	B. C. 551	479 B. C.
Campbell, Alex	Baptist	Founder of Campbellites	Va., Tenn. and Ky.	Ireland	June, 1786	March 4, 1866
Doddridge, Philip	Episcopal	Clergyman and Author	England	London, England	June 26, 1702	Oct. 26, 1751
Dow, Lorenzo	Methodist	Preacher	Eng., Ireland, U. S.	Coventry, Conn.	Oct. 16, 1777	Feb. 2, 1834
Dwight, Timothy	Congregationalist	President Yale College	Connecticut	Northampton, Mass.	May 14, 1752	Jan. 11, 1817
Edwards, Jonathan	Presbyterian	Preacher and Author	Connecticut	Windsor, Conn.	October 5, 1703	March 22, 1758
Eliot, John	Puritan	Indian Missionary	Massachusetts	Nasing, England	1604	May 20, 1690
Fenelon, Francis de S.	Roman Catholic	Prelate and Writer	France	Perigord, France	Aug. 6, 1651	Jan. 7, 1715
Flavel, John	Episcopal, N. C.	Preacher and Author	England	Bromsgrove, Eng.	1627	June 26, 1691
Flechiere, John W.	Methodist	Preacher	England and Europe	Nyon, Switzerland	Sept. 12, 1729	Aug. 14, 1785
Fo, or Fohi	Paganism	Founder of Religion	China	China	1027 B. C.	
Guyon, Jane B. de L.	Mystic Enthusiast	Religious Writer	European cities	Montargis, France	April 13, 1648	June 9, 1717
Henry, Matthew	Prot. Dissenter	Preacher and Author	Chester, England	Broad Oak, Eng.	Oct. 18, 1662	June 22, 1714
Hervey, James	Episcopal	Preacher and Author	Weston and Collingtra, England	Hardingstone, Eng.	Feb. 26, 1713	Dec. 25, 1758
Hillel	Jewish	Rabbi and Teacher	Palestine	Babylon, Assyria	112 B. C.	A. D. 8
Howard, John	Philanthropist	Physician	England and Europe	Enfield, England	Sept. 2, 1726	Jan. 20, 1790
Huntington, Countess of	Protestant	Philanthropist	England	England	Aug. 24, 1707	June 17, 1791
Hutchinson, John	Rationalist	Theological Writer	England	Yorkshire, England	1764	Aug. 28, 1737
Huss, John	Protestant	Eminent Reformer	Bohemia	Prague, Bohemia	1736	July 7, 1415
Ignatius de Loyola	Roman Catholic	Founder of Jesuits	Spain and Italy	Azcoitia, Spain	1491	July 31, 1556
James (bro. of John)	Christian	Christ's Apostle	Palestine	Bethsaida, Palestine		A. D. 44
Jerome of Prague	Protestant	Religious reformer	England and Europe	Prague, Bohemia	About 1375	May 30, 1416
Judson, Adoniram	Baptist	Missionary	Burmah	Malden, Mass.	Aug. 9, 1788	April 12, 1850
Judson, Mrs. Ann H.	Baptist	Missionary	Burmah	Bradford, Mass.	Dec. 22, 1789	Oct. 24, 1826
Judson, Sarah H.	Baptist	Missionary	Burmah	Alstead, N. H.	Nov. 4, 1803	Sept. 1, 1845
Judson, Emily C.		Missionary	Burmah	Eaton, New York	Aug. 22, 1817	June 1, 1854
John (bro. of James)	Christian	Christ's Apostle	Palestine	Bethsaida, Palestine		A. D. 99
Judas Iscariot	Hypocrite	Christ's Apostle	Palestine			A. D. 37
Knox, John	Protestant	Reformer	Scotland	Gifford, Scotland	1505	Nov. 24, 1572
Lutimer, Hugh	Protestant	Bishop and Martyr	England	Thurscaston, Eng.	About 1490	Oct. 16, 1555
Lee, Ann	Friend	Founder of Shakers	New York State	Manchester, Eng.	Feb. 29, 1736	Sept. 8, 1784
Luther, Martin	Protestant	Eminent Reformer	Germany	Eisleben, Saxony	Nov. 10, 1483	Feb. 18, 1546
Mason, John M.	Presbyterian	Author and Divine	New York City	New York City	March 19, 1770	Dec. 26, 1829
Mather, Increase	Presbyterian	Pres. Harvard College	Massachusetts	Dorchester, Mass.	June 21, 1639	Aug. 23, 1723
Mather, Cotton	Presbyterian	Preacher and Author	Massachusetts	Boston, Mass.	Feb. 12, 1663	Feb. 13, 1728
Melancthon, Philip	Protestant	Noted Reformer	Germ'y, France, Eng.	Brettan, Germany	Feb. 16, 1497	April 19, 1560
Mohammed	Moslem	Religious Founder	Arabia	Mecca, Arabia	570 or 571	June 8, 632
Moses	Jewish	Leader and Lawgiver	Egypt and Arabia	Egypt	B. C. 1571	B. C. 1451
Muhlenberg, Henry M.	Lutheran	Founder of Church	United States	Eimbeck, Germany	1711	1787
Matthew, or Levi	Christian	Christ's Apostle	Palestine	Galilee		
Miller, William	Protestant	Founder of Adventists	Eastern New York	Pittsfield, Mass.	1781	Dec. 20, 1849
Neander, Augustus	Lutheran	Church Historian	Germany	Gottingen, Germany	Jan. 17, 1789	July 14, 1850
Nathanael	Christian	Christ's Apostle	Palestine			
Paine, Thomas	Free Thinker	Liberal Author	Pennsylvania	Thetford, England	Jan, 29, 1737	June 8, 1809
Paley, William	Episcopal	Religious Writer	England	Peterboro, England	July, 1743	May 25, 1805
Parker, Theodore	Independent	Preacher and Author	Massachusetts	Lexington, Mass.	Aug. 24, 1810	May 10, 1860
Paul the Apostle	Christian	Gentile Missionary	Asia Minor, Europe	Tarsus, Asia Minor	A. D. 10	A. D. 65
Pelagius	Roman Catholic	Founder of Pelagians	Italy and Palestine	England	About 390	
Peter the Hermit	Roman Catholic	Originator of Crusades	Palestine	Amiens, France	1050	1115
Peter the Apostle	Christian	Preacher to Jews	Asia Minor	Bethsaida, Palestine		
Philip	Christian	Christ's Apostle	Asia Minor	Bethsaida, Palestine		
Robertson, Wm.	Presbyterian	Preacher and Historian	Scotland	Bosthwick, Scotland	Sept. 19, 1721	June 11, 1793
Rogers, John	Episcopal	Preacher and Martyr Burned at the Stake.	England, Germany	England	About 1500	Feb. 4, 1555
Sakya-Muna	Mystic	Teacher of Buddhism	Hindoostan		About 600 B. C.	
Socinus, Faustus	Unitarian	Religious Reformer	Switzerland, Poland	Siena, Italy	Dec. 1539	March 3, 1604
Spener, Philipp J.	Protestant	Founder of the Pietists	Germany	Rappoltsweiler, Ger.	Jan., 1635	Feb. 5, 1705
Spinosa, Benedict	Pantheist	Founder of a Sect	Holland, Germany	Amsterdam, Hol.	Nov. 24, 1632	Feb. 21, 1677
Spring, Gardiner	Presbyterian	Preacher and Author	Mass. and New York	Newburyport, Mass.	Feb. 24, 1785	Aug. 18, 1873
Swedenborg, Emanuel	Protestant	Religious Teacher, Seer	Sweden	Stockholm, Sweden	Jan. 29, 1688	March 29, 1772
Thaddeus, or Jude	Christian	Christ's Apostle	Palestine			
Thomas the Apostle	Christian	Preacher of the Gospel	Uncertain			
Tyndal, William	Episcopal	Preacher, Bible Translator	England, Germany	North Nibley, Eng.	About 1484	Oct. 6, 1536
Volney, Constantine F. C.	Deist	Physician and Author	France and Corsica	Craon, France	Feb. 3, 1757	April 25, 1820
Voltaire, Marie F. A.	Deist	Author and Poet	France	Paris, France	Nov. 21, 1694	May 30, 1778
Watts, Isaac	Independent	Preacher and Author	London, England	Southampton, Eng.	July 17, 1674	Nov. 25, 1748
Wayland, Francis	Baptist	Preacher and Author	New England	New York	March 11, 1796	Sept. 26, 1865
Wesley, John	Methodist	Founder of Methodism	England, America	Epworth, England	June 17, 1703	March 2, 1791
Wesley, Charles	Methodist	Clergyman and Hymn-writer	England, America	Epworth, England	Dec. 18, 1708	March 29, 1788
Whitefield, Geo.	Methodist	Preacher	England, America	Gloucester, England	Dec. 16, 1714	Sept. 30, 1770
Wickliffe, John	Episcopal	Religious Reformer	England	Wickliffe, England	About 1324	Dec. 31, 1384
Williams, Roger	Baptist	Founder of Rhode Island	Rhode Island	Wales	About 1599	1683
Zuinglius, Ulrich	Protestant	Swiss Reformer	Switzerland	Wildhausen, Switz.	Jan. 1, 1484	Oct. 11, 1531
Zoroaster	Mysticism	Author of Persian Bible	Persia		About 400 B. C.	

Glossary of Religious Terms.

ABBA—A word applied to religious superiors or bishops in foreign churches; meaning "Father."

Abbey—A society of monks, governed by an abbot, or of nuns, presided over by an abbess; also, the house in which they dwell.

Abbe—An abbot, or governor over an abbey.

Abbacy—Whatever pertains to the office of an abbot or abbess.

Academic—A believer in the philosophy of Plato or Socrates.

Acolyte—A church servant, employed in inferior duties.

Adamic—Relating to the first man, Adam.

Adoption—The reception of the redeemed into the family of God.

Advent—A devotional season in the Roman Catholic and Episcopal churches, just before Christmas; a coming; applied spiritually to the first and second coming of Christ to the earth.

Adventists—Generally applied to those who expect and teach that the second coming of Christ draws near; a religious sect.

Advocate—A term applied to Christ as our intercessor at the throne of God.

Affusion—The pouring or sprinkling of water upon a person in the ceremony of baptism.

Agnosticism—A doctrine that neither denies nor believes in the existence of God.

Agnus Dei—Latin words, meaning the Lamb of God; applied to Jesus Christ.

Albigenses—A sect of christian reformers who left the Roman Catholic church in the twelfth century; so called from Albi, in the south of France.

Alcoran—Another name for the Koran, the sacred scriptures of the Mohammedans, written by Mohammed.

Alcoranic—Belonging to Mohammedism.

Allah—The Arabian name for the true God.

All-hallow—A church feast on the first of November in honor of all saints; also called All-Saints'-day.

Alleluia—Hallelujah, signifying praise to Jehovah, the Jewish God.

All-Souls'-day—A Roman Catholic holy-day, when they pray for the souls of the faithful dead.

Amen—A word at the end of a prayer or thanksgiving, meaning, "Let it be so."

Anabaptist—One who does not believe in infant baptism.

Anathema—A curse pronounced by church authorities upon any person or thing.

Anathematize—To curse.

Anchorite—A hermit; one who religiously retires from society and dwells alone.

Anchoress—A female anchorite.

Angel—A messenger from God; a ministering spirit; a heavenly inhabitant.

Angelic—Pertaining to angels; innocent or amiable.

Antediluvian—Before the flood.

Anthem—Church music adapted to passages of scripture.

Anthology (Greek)—A book of Church prayers.

Anthropology—Or Anthropomorphism; expressions which invest the Deity with human passions and attributes.

Anti-Christ—The man of sin, as opposed to Christianity; described in I. John ii., 18 and II. Thessalonians ii., whose reign on earth is yet expected.

Anti-christian—Opposed to Christ's teachings.

Antinomians—A sect who, it is alleged, denied an obligation, under the gospel, to obey the moral law of the Old Testament.

Apocalypse—One of the names applied to the last book (Revelation) in the christian Bible; it means discovery, disclosure.

Apocrypha—Certain books in the christian Bible whose divine inspiration is considered doubtful.

Apostate—One who forsakes his religious vows.

Apostle—Applied to the twelve disciples of Christ; one sent out to preach the christian or other doctrine

Apostolical—Relating to the doctrines or work of an apostle.

Archbishop—A chief bishop.

Ark of the Covenant—A sacred chest of the Jews, containing the Mosaic tables of commandments and other religious memorials.

Armenians—A sect that maintained that the divine nature of Christ absorbed his human.

Arminians—Disciples of Arminius, of Holland: a sect of christians in the sixteenth and seventeenth centuries; believing in a conditional and divine election to salvation and reprobation; universal redemption, on conditions, and spiritual regeneration.

Ascension-day—A church festival in commemoration of the return of Christ into heaven after his resurrection.

Ash-Wednesday—The first day of the annual fast of forty days in the Episcopal and Roman Catholic churches, called Lent.

Ascetic—A religionist who separated himself or herself from the world; lived unmarried, and in seclusion and poverty.

Athanasian Creed—A creed used in the Church of England, relating to the Trinity; attributed to Athanasius, Bishop of Alexandria, in the fourth century.

Atheist—One who disbelieves or denies the existence of a Supreme Ruler or Creator; an infidel, or unbeliever.

Arianism—A belief in the doctrines of Arius, Bishop of Alexandria in the fourth century, who taught that Christ was created and inferior to God the Father in nature and dignity, although the first and best of created beings.

Atonement—Satisfaction for injury; specially adapted to the sufferings and death of Christ, by which God the Father became willing to forgive the sins of those who should believe in the all-sufficient power of Christ to save men from sin and its effects.

Augustine—An order of monks, named after St. Augustine; called also Austin friars, or White friars.

Auricular Confession—One of the tenets of the Roman Catholic Church, which requires its adherents to confess their sins in the ears of a priest.

Ave Maria—An invocation to the Virgin Mary; also a season of prayer in Italy.

Baal—The sun-god of the Phœnicians and Canaanites.

Baptism—A religious ceremony in which persons uniting with a christian church have water either sprinkled upon their heads, or have their bodies dipped beneath the water, in the name of the Divine Trinity; it is usually done but once in a life-time.

Baptist—One who administers baptism, as John the Baptist; specifically applied to a well-known sect who believe in baptism by immersing the whole body in water for adults, and who do not practice infant-baptism.

Belief—A firm persuasion that the teachings of theological leaders are true.

Belial—An evil spirit.

Benedictines—An order of Roman Catholic monks.

Benediction—A blessing.

Bigot—A strenuous and unreasonable advocate of any religious doctrine.

Bishop—The spiritual overseer of a church.

Brahma—A Hindostanese god, whom they worship as the creator of all things.

Brahmanism—The religion of Brahma.

Brahmin—A priest of the Hindoo religion.

Brahmanee—Wife of a Hindoo priest.

Broad Church—A Church between the High and the Low (or evangelical) church parties in England.

Brother—A member of a church or monastic order.

Buddhism—The religion of Buddha, in Hindostan.

Buddhist—One who worships or believes in Buddha.

Calvary—The place where Christ was crucified, just west of Jerusalem.

Calvinism—A religion taught by John Calvin, the Protestant Reformer, of France.

Calvinist—A believer in the teachings of Calvin.

Calvinistic—Relating to Calvin or his teachings.

Campbellites—A sect of the Baptists, known as Disciples of Christ, or Christ-ians, founded by Alexander Campbell, of Virginia.

Canaanites—People who inhabited the Land of Canaan, in Asia Minor.

Canon—A religious rule of doctrine, or church law.

Canonical—Relating to Church laws.

Canonicals—The official garments of a church functionary.

Canonization—Placing a dead person among the saints of the church.

Canon-law—The law which governs all Roman Catholic churches.

Canticles—The book in the Old Testament known as the Song of Solomon.

Capuchin—A monk or nun of the Roman Catholic order of St. Francis.

Cardinal—One of the council of seventy appointed by the Pope to advise in church matters, and from whom one is elected Pope by the others, when a vacancy occurs in the Papal chair.

Carmelite—A monk of the order established on Mt. Carmel, Asia Minor, in the fourth century, by the Roman Catholics.

Casuist — One who considers and settles cases of conscience.

Catechism — A reduction of doctrinal points to questions and answers, for educational purposes.

Cathedral — The church in which the bishop of a diocese principally officiates. Cathedra is the chair which he usually occupies when in his official position.

Catholic — Meaning the Universal, true, or whole Christian church; especially applied to the Roman Catholic church.

Celebrant — A church dignitary, who performs a religious rite.

Censer — A dish in which incense is burned in churches.

Ceremonial — The order of rites and ceremonies used in public worship.

Cerinthian — An ancient religious sect, which endeavored to harmonize the Jewish, Gnostic, and Christian doctrines.

Chaplain — A clergyman connected with the army or naval service, or some other department of the government or civic societies; legislative bodies, etc.

Cherub — A high order of angelic beings; plural, cherubim.

Christian—A disciple of Jesus Christ, one who loves and obeys His teachings.

Christianity — The religion of Christians, founded on the teachings of Christ.

Christening—The baptism of an infant.

Christmas—The anniversary of the birth of Jesus Christ, December 25.

Churchmen — A term usually applied to learned or active members or officials of the Episcopal church.

Church-Warden—A local official of the Episcopal Church, who oversees its temporal affairs.

Class-leader—A Methodist official, who has charge of the spiritual interests of a section of church-members.

Clergyman—One duly authorized to preach the gospel, and perform marriage, baptismal and funeral services.

Commentator—An expounder, or explainer of the Bible or other books.

Communion—Harmony between believers in any one form of religion, and between God and man; the celebration of the Lord's supper.

Compunction—A consciousness of guilt.

Confession—Acknowledgment of having done wrong.

Confessional — The seat where the priest sits while hearing the confessions of his flock.

Confessor — The priest who hears confessions in the Roman Catholic Church; also the one who confesses to him.

Confirmation — A sacred rite in the Episcopal church, wherein the bishop lays his hands upon the heads of the members and invokes the blessing of the Holy Ghost, with its sanctifying influences upon their lives.

Conformity — Having harmony with the Established Church of England, its rites, its doctrines and practices; or with those of any other denomination.

Confucian — A believer in the teachings of Confucius, the Chinese Philosopher.

Congregation — An assemblage of worshipers.

Congregationalism — That form of church government that has no bishop at its head; as the Baptist, Presbyterian and Congregational churches.

Consecration — Setting apart the person or property for a sacred purpose; dedicating a building to the worship of God; dedication.

Consistory — Any solemn assembly or council; a religious court for the settlement of church questions; the college of cardinals at Rome.

Consociation — A free-will confederacy of neighboring Congregational churches for mutual advice and co-operation in church matters, composed of lay members.

Consubstantiation — A Lutheran doctrine that the actual, substantial presence of the body of Christ is with the bread and wine of the Lord's supper.

Contrition — Penitence—true sorrow for sin.

Convent — An assemblage of monks or of nuns devoted to a religious life; the house in which they live; a Roman Catholic institution.

Conventual — One who lives in a convent.

Conversion — In theology, a turning from wickedness to righteousness, usually accompanied by repentance for past sin; belief in Christ as the Savior, and desire to be made holy.

Conviction — A convincing of the conscience or the mind as to the wickedness of the life; it usually precedes conversion.

Convocation — A general assembly of the clergymen of the Church of England, to consult as to the affairs of the church; any called assemblage.

Corporealist — One who denies the existence of spiritual beings.

Corpus Christi—(Body of Christ)—A Roman Catholic festival having reference to the sacrament of the Lord's supper.

Covenant — An agreement; the promises of God as found in the Christian Bible, with the conditions on which they will be fulfilled, such as man's repentance, obedience, etc.

Creed — A summary of belief in certain doctrines.

Crosier — An archbishop's staff, with the figure of a cross at its top.

Cross — Two pieces of wood or metal laid across each other and fastened; a symbol of the cross on which Jesus Christ was nailed and died.

Crown — The head-dress of royalty; spiritually, the Christian, through grace, is able to overcome temptation, and thus wins a crown of victory; after death, if he is faithful, he hopes for a crown of glory.

Crucial — Partaking of the nature of a cross or crucifixion, applied to any severe trial of the mind or body.

Crucifix — An image of Christ dying on the cross.

Crucifixion — Suspension of a human body on a cross; applied specifically to the death of Christ.

Curate — An assistant to the clergyman in the Church of England.

Damnation — The state of being condemned; the punishment of the wicked after death.

Deacon — The lowest order of clergymen; a subordinate church officer.

Dean — A church prelate, subordinate to a bishop.

Decalogue — The ten commandments of God.

Dedication — See Consecration.

Deify — To make a god of anything or being; to make godlike; as, Cæsar was deified.

Deism — The doctrine or creed of a deist.

Deist — One who believes in a Supreme Ruler; but not in revealed religion, taking nature and reason for his guide in doctrine; a free-thinker; an infidel.

Deistic — Pertaining to deism.

Deity — A Divine being; God, the Supreme Ruler; whatever distinguishes God from other beings.

Deluge — The destruction of mankind by water in the days of Noah.

Demon — A spiritual being, a departed soul; an evil spirit; a devil.

Demoniac — A human being influenced by a demon; a sect who believe that the devils will finally be saved from God's wrath.

Denomination — A religious sect; a collection of individuals of the same belief and name, as the Presbyterians.

Dervish — A Turkish or Persian monk.

Devil — Satan; the adversary of God and man; the ruling evil spirit.

Devilish — Resembling the devil; an evil disposition; devoid of charity or virtue.

Devotional — Having a prayerful, worshiping spirit.

Devotion — Affection for God manifested in earnest prayer and praise.

Diaconate — The office of a deacon; government by deacons.

Diluvian — Pertaining to the flood of Noah's time.

Diocese — The district governed by a particular bishop, the bishop is a diocesan.

Dirge — A funeral hymn or piece of music.

Disciple — One who willingly receives and adopts the teachings of another as his or her guide.

Discourse — Conversation; a sermon; an explanatory address.

Dispensation — The distribution of good and evil by God to man; God's system of governing man, as the Jewish and Christian dispensation.

Divine — Belonging to the Deity, a minister or priest.

Doctrine — Principles of a system of religion.

Dominicans — Roman Catholic orders of monks and nuns, established in the thirteenth century by St. Dominic.

Druid — A religious priest or minister among the ancient Celtic races in Gaul, Britain or Germany.

Easter — A Roman Catholic and Episcopal church festival, commemorating the end of Lent and the resurrection of Christ from the dead.

Ecclesiastical — Pertaining to a church or its government.

Edda — Ancient Icelandic scriptures.

Election — A doctrine of partial salvation; only chosen ones saved.

Encyclical — For many; applied to official letters from the Pope.

Episcopacy — A form of church government where a bishop presides.

Episcopal — Relating to a bishop and his charge.

Eucharist — The Lord's supper.

Evangelical — In harmony with the New Testament teachings.

Evangelist — A traveling preacher of the gospel.

Excommunicated — Expelled from church membership.

Exegesis — Scientific explanation of the Bible.

Father, Son and Holy Ghost — The three Persons comprising the Christian's Trinity or Godhead; one God, three Persons; the Father being the Creator and Preserver of all things; the Son, the Savior of men, known as Jesus Christ, and the Holy Ghost, the enlightening, convincing, and sanctifying Spirit of God.

Fetichism — A low form of worship, which makes gods out of animals, stones, sticks, etc.; a superstitious religion among the ignorant.

Friar — A Brother or member of any Roman Catholic order of monks.

Friends — The sect also called Quakers.

Gentile — One who is not a Jew.

Gospel — Literally, good news; applied to the New Testament scriptures, as containing "glad tidings of great joy, for all people."

Grace — The unmerited favor of God bestowed upon His creatures; the exercise of love, kindness or good-will.

Hades — The intermediate place between earth and heaven, or earth and hell, where the souls rest after death until the judgment-day.

Heathen — One who worships idols; an irreligious, unthinking person; the Jews called all people heathens who were not Jews; a pagan.

Hebrew — A descendant of the Patriarch Jacob; an ancient inhabitant of Palestine; an Israelite, or a Jew; also the Hebrew language; also whatever else pertains to the Hebrews.

Hegira — The flight of Mohammed from Mecca, in A. D. 622, from which date his followers reckon time.

Hell — Sometimes applied to the grave; a condition of discomfort or misery before or after death; the future abode of the wicked.

Holy Ghost — The third Person in the Christian Trinity or Godhead; the enlightening, convincing, sanctifying Spirit of God.

Imaum — A Mohammedan priest.

Infidel — Generally, a disbeliever in a Supreme Being and revealed religion; one without religious belief of any kind; a skeptic; an opposer of religious teachings.

Infidelity — Want of faith in Christian or other religious teachings; unfaithfulness to marriage vows; a breach of trust; disregard of moral obligations.

Infinite — Spiritually, without limit; as the power, wisdom, capacity, perfection, goodness, and love of God.

Israel — The name given by God to the Patriarch Jacob, with the promise of a numerous progeny.

Israelites — Descendants of the Patriarch Jacob; Hebrews, or Jews.

Islam — Submission, obedience and humility before God; the religion of Mohammed and all his followers.

Islamism — The faith or creed of Mohammedism.

Itinerant — A traveling preacher.

Jehovah — The Jewish name for God.

Jesuits — A religious order of the Roman Catholics, founded by Ignatius Loyola; its members take vows of poverty, chastity and obedience; it is large in numbers, zeal and influence.

Judaism — The doctrines taught by Moses.

Justification — God forgiving the sins of men because Christ bore the penalty of their sin in His crucified body; requires faith in Christ as the Savior.

Koran — The scriptures of the Mohammedans.

Lectionary — The Roman Catholic service-book; also called a Mass-Book.

Lent — A church fast of forty days, beginning with Ash-Wednesday and ending with Easter-day.

Levite — A descendant of Levi, son of Jacob, whose family was set apart for priestly offices; the Levites were subordinate to the priests.

Magi — A caste of Persian priests, or wise men.

Mahomet — Same as Mohammed.

Martyr — One who dies, or is persecuted, on account of his religious belief.

Materialist — One who denies the existence of spiritual substances, and maintains that the soul of man is the result of a particular organization of matter in the body. (Webster).

Messiah — Christ the promised Deliverer of Israel; described in the Old Testament, rejected by the Jews, but accepted as the Savior by all Christians.

Methodists — The denomination of Christians founded by John Wesley.

Millennium — A thousand years of holiness and peace on earth, described as a future event in Revelation xx. A Millenarian is one who believes in a literal reign of Christ on earth during the millennium.

Monastery — A dwelling-house for monks, as a convent is for nuns.

Monk — A religious devotee, who separates himself from the world for service as a Roman Catholic priest; a dweller in a monastery.

Mormonism — The religion founded by Joseph Smith.

Mosaic — Pertaining to the career and laws of Moses, the Israelitish leader.

Moslem or Mussulman — A believer in the doctrines of Mohammed.

Mysticism — Obscurity of doctrine.

Mystics A sect which professes a pure sublime, disinterested devotion, and claims direct intercourse with the Divine Spirit.

Nihilism — Skepticism as to the reality of anything.

Nuncio — A Papal ambassador to a sovereign.

Nun — A woman devoted to a religious life, and living in a convent.

Ordination — Religious ceremonies in preparing a minister or priest for active duties in the church.

Optimist — One who believes that all things are ordered for the best.

Pagan — One who worships false gods.

Pantheism — The doctrine that the universe, as a whole, is God.

Papal — Relating to the Pope of Rome.

Papist — A Roman Catholic.

Patriarch — Ancient heads of families among the Jews.

Pelagian — A follower of the doctrines of Pelagius.

Pentateuch — The first five books of the Old Testament.

Pentecost — The fiftieth day after the passover; a solemn festival of the Jews.

Pessimist — One who believes that everything is tending to the worst.

Pharisees — A sect of the Jews, rigid in their outward religious ceremonies, separating themselves on this account from other Jews.

Pietists — A German sect of Reformers.

Polytheism — The doctrine of a plurality of gods.

Pontifical — Belonging to the Pope.

Predestination — The doctrine of predestination by God of certain events in the history of men, especially their future happiness or misery.

Presbyter — An elder in the Presbyterian church, and a priest in the Church of England.

Presbyterian — One who belongs to a church governed by presbyters.

Priesthood — The office or character of a priest.

Probationer.—A member taken on trial in a Methodist church for six months.

Processional — Whatever relates to religious processions.

Puritans — Early dissenters from the Church of England.

Puseyism — A proposition to carry back the discipline and doctrine of the Church of England to the second year of King Edward the Sixth. Dr. Pusey, however, was less of a doctrinarian than a ritualist.

Pyrrhonist — A skeptic, who has doubts of everything.

Quaker — A member of the sect called Friends.

Rationalist — One who depends wholly on his reason as the supreme authority in matters of religion; a disbeliever in revealed religion.

Redemptionists — A Roman Catholic order, the priests of which devote themselves to the spiritual wants of the German people.

Religion — Any system of faith and worship.

Restorationists — Those who believe that the punishment of the wicked after death will be but temporary, and that then they will be restored to the favor and presence of God; the Universalists.

Revelation — Divine truth revealed to man.

Ritualism — A rigid adherence to religious forms and ceremonies; confidence in such rites.

Romanist — An adherent of the Roman Catholic church; a Roman Catholic.

Sabianism — The worship of the sun, moon and stars.

Sabbatarian — One who keeps holy the seventh day of the week.

Sabbath — Kept by the Jews and others on Saturday as a holy day, instead of Sunday; Sunday is also a Sabbath, or seventh day.

Sacerdotal — Pertaining to the office of a priest.

Sacrament — A sacred religious ordinance enjoined by Christ, of which two are observed by Protestants—baptism and the Lord's supper.

Sacrifice — An offering solemnly consecrated or presented to God in token of acknowledgment or thanksgiving.

Sacrilege — Defiling or making wrong uses of sacred things.

Sacristan — A church officer, who has charge of its movable property; a sexton.

Sadducees — A sect of the Jews, who denied the resurrection of the dead.

Sanctification — Making holy—a work of the Holy Ghost.

Sanctuary — Any house or place devoted to the worship of God.

Sanhedrim — The principal Jewish tribunal, composed of seventy-two members, over which the high priest presided; called, also, the Council.

Satanic — Resembling the devil; fiendishly malicious.

Sectarian — Relating to religious sects; a bigoted attachment to any sect.

Shakerism—Pertaining to the Shakers; sometimes known as "Shaking Quakers."

Skeptic — One who doubts the truth of any religious belief.

Socinianism — An Italian theology of the sixteenth century, denying the Divine Trinity, the deity of Christ, the personality of the devil, the atonement of Christ, and the eternity of future punishment.

Soul — The spiritual, rational and immortal part in man, capable of the highest state of bliss, or the deepest condition of misery.

Spiritualism — A belief that mankind are permitted to communicate with the spirits of the dead, through the medium of an appropriate person.

Spirituality — A spiritual condition of individuals or churches.

Stole—Part of the dress of a Roman Catholic Clergyman; a narrow embroidered scarf with broad ends. Surplice. His gown.

Swedenborgian — A believer in the doctrines of Swedenborg, the Swedish seer and founder of the New Jerusalem Church.

Synagogue — Jewish house of worship.

Synod — A council of church dignitaries to consult on matters of religion.

Tabernacle — A tent or temporary place for worship.

Talmud — A book of Jewish laws and traditions, with expositions of them.

Theocracy — A government under the immediate direction of God.

Theology — The science of God and His relations to His creatures; the divine laws, doctrines, etc.

Transubstantiation — A doctrine of the Roman Catholic church that the bread and wine in the Lord's supper are actually changed into Christ's flesh and blood.

Trinity — See Father, Son and Holy Ghost.

Trinitarian — One who believes in the Divine Trinity of Father, Son and Holy Ghost.

Unitarian — One who denies the doctrine of the Trinity, believing that God exists only in one person. (Webster).

Universalism — One who believes in the future restoration of all men to eternal felicity.

Vaticanism — The doctrine of Papal dominion.

Venial Sin — A sin that weakens but does not destroy the person's sanctity; a doctrine of the Roman Catholic church; a sin that can be forgiven.

Vespers — Evening service in Roman Catholic or Episcopalian churches.

Vestrymen — Persons elected in the Episcopal church to have charge, in connection with the Wardens, of its temporal affairs.

Vestments — The official garments of a clergyman or priest.

Vicar—A ruling clergyman in the Church of England, who is subordinate to the Bishop.

Vicarious Atonement — The sufferings and death endured by Jesus Christ in the place of sinful men, that they might escape from deserved punishment.

Vishnu — In the Brahman religion, Vishnu is the destroying deity; Brahma, the creator; and Siva, the preserver.

Visible Church — The believers in Christ all over the world as one body of worshipers.

Wesleyanism — The principles of Wesley, the founder of the Methodist church; Methodism proper.

Zend Avesta—The ancient scriptures of the Persians, attributed to Zoroaster.

Duke of Wellington.

AT DANGAN CASTLE, near Dublin, in Ireland, in 1769, was born Arthur Wellesley, the third son of the Earl of Mornington. Of an excellent parentage, he inherited a well-balanced organization of mind. To this was added the best education which the schools at Eton could give. He received, further, a military education at Angers, in France.

At eighteen he was commissioned an Ensign, and at twenty-six, as a Lieutenant Colonel, he commanded a brigade in the English army. When twenty-seven years old he went as a Colonel with his regiment to India. Six years later he was made a Major-General, doing conspicuous service in the Indian wars in 1803.

He returned to England in 1805, and soon after entered Parliament, when thirty-six years of age. Two years afterwards he was engaged in military service again, and in the succeeding seven years he served his country so well, in the various military fields to which he was assigned, as to win, in 1814, the thanks of Parliament and a pension of £20,000 per year, besides a Parliamentary grant of £500,000. In that year he was also made Duke of Wellington.

In 1815, with his military headquarters at Brussels, in Belgium, he fought at Hougomont, on June 18, his final famous conflict, known as the battle of Waterloo, in which Napoleon and the French troops were defeated. Three days afterwards he crossed, with his army, the French frontier, and proceeded to Paris, where terms of settlement were agreed upon, which, upon his part, as commander of the army and conqueror, were liberal and magnanimous.

For his distinguished services, the King of the Netherlands made him Prince of Waterloo, and the British nation gave him an estate worth £200,000.

In 1818, the Duke resigned his command in France, and returned to England, where he was appointed Commander-in-Chief of the army, a position which he held, except at brief intervals, until his death, his attention being largely occupied during his remaining years with state affairs.

From 1827 to 1830 he was England's Prime Minister. He was subsequently appointed to several most important and responsible state positions, in all of which, whether in the cabinet councils or not, he extended his influence to the utmost to preserve the peace of Europe, which he did, almost unbroken, for forty years after the battle of Waterloo. He died of apoplexy, at Walmer Castle, Kent, in England, September 14, 1852, being eighty-three years of age at the time of his death.

He was buried in St. Paul's Cathedral, in London, and the public obsequies attending his burial were the most elaborate ever seen in England.

He was strongly built, possessed sharp gray eyes, a prominent, aquiline nose, and was below medium height. He united in his character quick discernment to perceive, courage to execute, and conscientious desire to do justice. Although lacking in oratorical power, his judgment was always such as to command attention and influence. Altogether his career stands prominent as an existence well rounded out, being from the first to the last a most successful life.

WELL-KNOWN AND IMPORTANT BATTLES OF THE ENGLISH.

BATTLE of Hastings.—Fought between William of Normandy, surnamed the Conqueror, and King Harold, of England, near Hastings, England, October 14, 1066. William had in his command 60,000 Normans; the number commanded by King Harold is unknown. Result—The defeat and death of Harold, and the partial conquest of England by the Normans.

Battle of Bannockburn.—Fought between Robert Bruce, of Scotland, with about 30,000 men, and Edward II., of England, with nearly 100,000 Englishmen, at Bannockburn, Scotland, June 24, 1314. The English were defeated, with the loss of 30,000 men. By this conflict the independence of Scotland from England was achieved, and Bruce secured its throne.

Battle of Towton.—Fought at Towton, near York, England, between the rival claimants to the throne of England, Edward IV., and Henry VI., March 29, 1461. Each was supported by about 60,000 men, and an agreement was made that no quarter should be given. The battle lasted more than a day, and ended, after the slaughter of over 30,000 persons, in the defeat of Henry and the Lancastrian army, the victory of the York dynasty and the establishment of Edward IV. upon the throne of England.

Battle of Bosworth.—Fought on Bosworth field, England, between the Earl of Richmond, a claimant for the throne of England, and Richard III., the reigning King, August 22, 1485. Treachery aided Richmond, and Richard fell, fighting bravely, Richmond winning the field. Richard was the last of the Plantagenets, and their government, by this event, passed into that of the Tudors.

Battle of Copenhagen.—Fought at Copenhagen, Denmark, between the Danish fleet, with 12,000 Danish troops, and Lords Cathcart and Wellington, with 7,000 English soldiers and a naval force, September 2–5, 1807. The combined land and sea attack resulted in the capture of the Danish fleet, and Wellington received the thanks of Parliament for this victory.

Battle of Talavera.—Fought at Talavera, in Spain, July 27 and 28, 1809, between 22,000 British troops, under Lord Wellington, and 50,000 French, under Victor, Jourdan, and Sebastiani. On the second day the French were driven out, and Wellington occupied the city.

Battle of Badajoz.—Soult, with the French army, having taken the fortified city of Badajoz, Spain, from the Spaniards, Wellington, with his British troops, besieged the city for twenty days. On the night of April 6, 1812, he captured the city by a bloody assault, in which he lost 3,500 men. His total loss during the siege was about 5,000.

Battles of Ligny and Quatre Bras.—To defeat the probable design of Napoleon to occupy Belgium, Wellington, with his allied troops, and Blucher, with his Prussian command, undertook its defense. On June 16, 1815, Blucher and the Prussians encountered Napoleon and the French troops at the Belgian village of Ligny. The fight was extremely severe, the Prussians losing 12,000 men and twenty-one cannon, and suffering defeat. Napoleon's loss was 7,000 men. On the same day, the French, under Marshal Ney, and the Belgians and British, commanded by Wellington, fought a battle at Quatre Bras, another village of Belgium, seven miles from Ligny. The latter held their ground, and upon Wellington's receiving a reinforcement, the French retired, leaving the allies in possession of the village.

Battle of Waterloo.—Fought near the Belgian village of Waterloo, eight miles southeasterly from Brussels, June 18, 1815, between Napoleon, with about 72,000 men (including 15,000 cavalry) and 240 guns, and the British allied army, under Lord Wellington, of about 70,000 men (including 13,500 cavalry). The allies consisted of a little more than 25,000 English soldiers, about 17,500 Netherlanders, and the rest were Germans, and were subsequently reinforced by Blucher and the Prussians. The battle lasted from before noon until towards evening, and resulted in the complete rout of the French troops, and the overthrow of the French Emperor. The losses of the British allies, including those of the Prussians, were about 23,000 men, and of the French more than 30,000, besides 227 pieces of cannon.

Napoleon Bonaparte.

His Brilliant Career and Final Overthrow.

ONE OF THE most conspicuous characters in the history of the world was Napoleon Bonaparte. Imperious and self-willed as a child; talented and aspiring as a youth; ambitious, successful, rich and one of the most powerful men in the world in his manhood; beaten, defeated and dying a prisoner on a lonely island at last—his career, whatever may be the opinion concerning his merit, was, at least, calculated to claim the attention of mankind.

NAPOLEON I.

Corsica is an island about 115 miles long by 52 wide, situated in the Mediterranean Sea, about 100 miles southeastward from France. Upon this island, at Ajaccio, August 15, 1769, Napoleon was born. Here he passed his childhood, a fondness for military tactics very distinctly marking itself with him in his boyhood, as shown in a fondness for organizing, drilling and commanding in military companies (so his biographers claim) the boys with whom he was associated.

His father was Charles Bonaparte, a Corsican noble. His mother was a woman of superior beauty, courage and ability, and upon her devolved the youthful education of her children, of whom there were two sons, Joseph and Napoleon, and three daughters.

Evincing a decided taste for military pursuits, Napoleon was sent to the military school of Brienne, in Champagne, when eleven years old, and afterwards to a military school at Paris, to complete his studies.

In 1785, when sixteen years of age, he was made a Lieutenant of artillery and put on duty in his native country. Subsequently driven by the English out of Corsica, he lived with his family in very humble circumstances at Marseilles, in France.

In 1793 he was made a Captain, and soon after was instrumental in securing the capitulation of Marseilles. The summer of 1793 Napoleon spent in Paris. In September of that year he took part in the siege of Toulon. For extraordinary military success achieved there he was made, in 1794, a Brigadier-General of artillery. He was then twenty-five years old.

At the close of a campaign against the Piedmontese troops, in 1794, he retired to Paris, but his loyalty having been suspected, he was not assigned to service. He remained in Paris for about five months, in such poverty as to make even the blacking of his boots an expense in which he could not indulge. Hope, however, buoyed him up. He was young, adventurous, and the future was before him. In his thoughts of what he might accomplish, he seriously contemplated at one time offering his services to the Sultan of Turkey. In the meantime, however, the French government, having adopted a new constitution, and a dissension having sprung up whereby the party in power was likely to be besieged and dispossessed, he was called to the command of 5,000 troops, and successfully repulsed 30,000 of the National Guard, who were attempting to take possession of the Convention.

Through the accomplishment of this achievement he was soon afterwards given the command of the army of the interior. This was in 1795, when he was twenty-six years of age. During this time having made the acquaintance of Madame Josephine Beauharnais, a widow of superior accomplishments, from the West Indies, he was married to her, and through the influence of this union he was given the control of the army in Italy, of which, one week after his marriage, he departed to assume command.

His army consisted of 30,000 troops. Opposing him were 60,000 men; yet, notwithstanding that difference in numbers, he instituted a campaign which resulted in routing and destroying five armies, each larger than his own, and made large accessions to the territory of France.

He next invaded Egypt, of which his army soon possessed the mastery. He then passed into Syria for more conquests, but having a decimated army he returned to Egypt, where, giving the control of his forces to Kleber, his second in command, he returned to France to be the head of a powerful party, overthrew the Directory then in power, and made himself First Consul. That was in 1799. The next five years of his life were full of startling events. In 1800 he was again in Italy, at the head of his army, and for various successes he was proclaimed by the French government Consul for life. In 1805 he was made Emperor. On the occasion of his coronation, he disdained the assistance of the

Pope, but, instead, placed the crown upon his own head, and at the same time crowned Josephine. Six months later he crowned himself King of Italy, at Milan.

In the succeeding two years Napoleon, again at the head of his armies, secured victories in Austria, Prussia and Portugal; made the King and Queen of Spain abdicate in favor of his brother Joseph, and at the same time gave the throne of Naples to his brother-in-law, Murat.

In 1809 Napoleon was divorced from Josephine for the purpose of marrying Maria Louisa, the daughter of the Emperor of Austria. The fruit of this marriage was one child, a son, who at birth was designated the King of Rome. New alliances were formed, and the French Empire had seemingly a settled future before it. Napoleon, then forty-two years of age, was in the zenith of his power. From that time, however, his sun slowly began to set.

The Spaniards did not take kindly to the encroachments of the French, and the wars waged in that country under the Napoleonic dynasty cost France 400,000 men. Then came a period of great financial depression throughout France, in which the people were impoverished, and following came the opening of hostilities among the nations northward from France. At the head of an army of 500,000 men, Napoleon passed into Russia, where victory crowned his marches until he drove out the Russians from Moscow, of which city he took possession, in 1812, with his victorious army. Here, on the night of September 15, with the city in their possession, the French were startled by the breaking out of fire in all parts of the town. The Russians had resorted to the only means they knew of to vanquish their pursuers — the sacrifice of their homes in order to destroy the means upon which their enemies subsisted.

Napoleon's Grave

At St. Helena.

Into the heart of the enemy's country Napoleon dare not pursue further. Until October 19th he lingered, endeavoring to make a settlement for peace, but all offers being rejected, he reluctantly commenced a retreat, which, in the midst of the snows that had fallen, was one of the most terrible journeys for an army of which history makes record. Napoleon himself, in a private conveyance, made his way directly to Paris, and announced his defeat, his losses being, out of the 500,000 men whom he took into Russia, 125,000 slain, 132,000 dead from hunger, disease and cold, and 193,000 lost as prisoners.

Napoleon at once set about the conscripting of new troops, and in 1813 he passed into Germany to prosecute other wars, many great battles being fought in that year, with varying success, the battle at Leipsic costing his army 50,000 men. At length the French people were clamorous for peace, the strength and manhood of the country being so rapidly drained as to make war no longer desirable. Napoleon encountered this feeling upon his return from Germany, but, organizing a fresh campaign, he made another effort to contend with the allied powers, which were moving against him, and which finally entered the French capital and compelled him to abdicate his throne, he being given the island of Elba for his retreat.

He pined here for more action, and within a year, escaping from his retreat, he gathered about him the army, once more marched upon Paris and drove Louis XVIII. from the throne upon which he had been seated by the other European powers. The Congress of Nations, then in session at Vienna, immediately inaugurated measures to unseat him. Napoleon, with his enthusiastic followers, undertook again the initiative, and, in Belgium, was successful in defeating the Prussians at Ligny. But his army was too weak for the combined powers then arrayed against him. On the 18th of June, 1815, was fought the battle of Waterloo; the great military chieftain there met his overthrow, and the French army was dispersed.

Napoleon hurried to Paris, and was soon followed by foreign armies, who again took possession of the French capital. After twenty-three years of war, in which hundreds of thousands of the men of France had been sacrificed, their capital was now in the hands of the foreign powers. The French Legislature demanded that Napoleon abdicate the throne once more, and just one hundred days from the time he had last ascended it, he signed a treaty for its abdication again, he being required to embark immediately for the United States. Fearing, however, capture by the British cruisers, he went on board a British man-of war and voluntarily gave himself up, trusting to the magnanimity of England for a generous hospitality. The English nation, however, insisted upon considering him a prisoner of war, and from the allied powers they obtained consent to banish him to the island of St. Helena, where, like a caged eagle, accustomed to lofty and grand flights, he pined under his restraint for six years, and died May 5, 1821, during a terrific storm of wind and rain, which vividly recalled to him, in his dying moments, the terrible battle-scenes in which he had been so many times the central figure.

Maria Louisa never saw him again after his banishment to the isle of Elba, and in his declining fortunes from that time forward she apparently took no interest. She married, in 1821, an Austrian general, Count Albert Von Neipperg, who had himself been divorced from his first wife. Maria Louisa bore him several children, and was a devoted wife and mother.

Josephine, who had at one time been divorced from her first husband, before her marriage with Napoleon, was most devotedly attached to the Emperor, notwithstanding her divorcement from him, and was restrained from sharing his imprisonment at Elba only from fear of hurting the feelings of Louisa. With an annual income of £100,000 and her rank and title settled upon her by Napoleon, she spent the last years of her life at Malmaison. At her death she was buried in the church of Rueil, in a tomb erected by her children, Eugene and Hortense.

At his death, Napoleon was buried beneath a weeping willow, in Slane's valley, on the island of St. Helena, where his remains rested for twenty years. Under the administration of Louis Philippe his ashes were removed to France, and they now rest there under an imposing monument in the Hotel des Invalides.

An overweening ambition for power, a despotic government, too great a love for war, which overwhelmed his country in trouble, ill-treatment of the King and Queen of Spain, and many other actions which mark the tyrant, are stains that blacken his memory. Nevertheless he did many wonderful things for France. He subdued anarchy and brought order out of chaos; he re-established her church, and during his reign he placed his country in the very first rank of the nations.

He was unsurpassed as a military genius and administrator. He possessed in the highest degree self-reliance, untiring energy, and the power to command. His short, thick-set frame carried one of the loftiest intellects in the world, and for daring adventure, bold and wonderful achievement, his career was one of the most remarkable in the personal histories of the world.

Important and Well-Known Battles of the French.

BATTLE OF MARENGO.—Fought at Marengo, a village of Piedmont, Italy, June 14, 1800, between about 28,000 French soldiers, under Victor and Napoleon, and an Austrian army of 31,000 men and 200 cannon, commanded by General Melas. At one time the French retreated, but rallied again and overwhelmed the Austrian force. The Austrians lost 7,000 killed and wounded, 3,000 prisoners, 20 pieces of artillery and 8 battle-flags. The loss of the French was about 7,000 killed and wounded, and 1,000 prisoners. The result of this battle was the evacuation of all the fortified places in Italy west of the Mincio river, held by the Austrians.

Battle of Hohenlinden.—Fought at Hohenlinden, a village of Upper Bavaria, twenty miles east of Munich, December 3, 1800, between the French General Moreau, with 100,000 men, and Archduke John of Austria, with an unknown number of Austrians. It resulted in the victory of the French troops. The Austrians lost 8,000 in killed and wounded, more than 10,000 prisoners, and 100 guns. The French loss was about 5,000 men. This battle re-opened negotiations leading to a treaty of peace at Luneville.

Battle of Austerlitz.—Fought near Austerlitz, a small town in Moravia, December 2, 1805, between Napoleon, with 80,000 French soldiers, and the combined Russian and Austrian army of 84,000 men, commanded by the Emperors of Russia and Austria. The allies having chosen their position wrongly, Napoleon attacked and completely routed them, after a most severe contest. The allies lost 30,000 in killed, wounded and prisoners, and the French 12,000. As a result of this battle, Austria was compelled to negotiate the peace of Presburg, the Emperor of Russia retired to his own dominions, and Napoleon acquired a large control of Central Europe.

Battle of Jena.—Fought October 14, 1806, at Jena, Germany, between the French, under Napoleon, and the combined Prussian and Saxon army, and the latter were routed with fearful slaughter. On the same day, at Auerstadt, Germany, Marshal Davoust, in command of a French force, achieved a victory over the Prussians. By these two battles, more than 20,000 Prussians were killed, the military strength of Prussia was materially reduced, and Napoleon, following up the advantages thus gained, soon obtained possession of the capital of that kingdom.

Battle of Friedland.—Fought at Friedland, Prussia, June 14, 1807, between Napoleon, with over 70,000 French troops, and about 55,000 Russians, under General Benningsen. The French loss was 8,000 men and two standards; the Russians lost 17,000 men and about eighty guns. This battle resulted in the treaty of Tilsit, July 7, 1807.

Battle of Albuera.—Fought May 16, 1811, at Albuera, Spain, between General Beresford, commanding about 30,000 allied British, Spanish and Portuguese troops, and 23,000 French, under Marshal Soult. The latter hoped by defeating Beresford to raise the siege of Badajoz by the British, but was decisively defeated by the allies.

Battle of Ciudad Rodrigo.—Fought at Ciudad Rodrigo, a stronghold of Spain, near the Portuguese boundary, January 19, 1812. Massena, with a French force, had occupied it in 1810, and retained it. Wellington began its siege January 8, 1812, and furiously bombarded it. Finding that two breaches of sufficient size had been made in the walls, he stormed the fortifications in the face of a murderous resistance, but succeeded in capturing the town. The British gained a vast amount of stores and 150 cannon, but lost 1,300 men. The French loss was 300 killed and 1,500 prisoners. For this exploit, Wellington was created a duke by Spain, a viscount by Portugal and an earl by England.

Battle of Leipsic.—Fought October 16, 17, 18 and 19, 1813, between 160,000 French, under Napoleon, with 800 cannon and 300,000 men and nearly 1,400 cannon, under Prince Schwarzenberg, composing the allied armies of Russia, Prussia and Austria. After severe fighting against such fearful odds, on the 19th, Napoleon made a full retreat, leaving 12,000 able soldiers and 25,000 more of sick and wounded in the hands of the allies. The total loss of the French was more than 60,000, and that of the allies 50,000. This battle and its results served to hasten the downfall of Napoleon.

GREAT MILITARY HEROES OF THE WORLD.

ABDEL KADER—An Arabian Emir; born in Algeria near Mascara, in 1806 or 1807; operated in Algeria and Morocco, against the French and Moors. He was a learned author as well as a warrior, and the father of twenty-four children; died in 1873.

Abercromby, Sir Ralph—A British General; born in Scotland, in 1738; fields of operation: The seven years' war; American war; Flanders and Holland; commander in the West Indies; Irish revolution of 1798, and against the French in Egypt; wounded in the battle of Alexandria, Egypt; died near that city in 1828.

Abrantes, Duke of—Andoche Junot—A Colonel-General of French hussars under Napoleon I.; born at Bussy-le-Grand, in Burgundy, in 1771, an impetuous officer, and known as "the Tempest;" raised from the ranks for bravery; distinguished in Bonaparte's Italian and Egyptian campaigns; commanded in Portugal; served in Spain and Russia; died insane, at Montbard, France, in 1813.

Ætius—A Roman General; born in Mœsia, about A. D. 396; vanquished Burgundians and Franks in Gaul; attacked Attila, the Hunnish invader of Gaul, on the plains of Chalon, in 451, and more than 300,000 men perished on both sides; was assassinated at Rome, A. D. 454, by the Roman Emperor Valentinian, who was jealous of his fame

Agamemnon—An ancient King of Mycenæ, in which kingdom he is supposed to have been born, date unknown; commanded the combined forces of Greece at the memorable siege of Troy, immortalized by Homer; murdered by his wife on his return from that campaign.

Agricola, Cneius Julius—A Roman General; born at Forum Julii (now Frejus), in Gaul, A. D. 40, sent to Britain by Domitian, and brought it into complete subjection, murdered, it is supposed, by Domitian, who was jealous of his success, at Rome, A. D. 93.

Alcibiades—An Athenian General; born at Athens, Greece, B. C. 450; effected the conquest of Sicily and that over Sparta; was murdered, B. C. 404, by a Persian satrap, at the instigation of Lysander.

Alexander the Great—A Macedonian General; born in Macedonia, B. C. 356; destroyed Thebes, defeated King Darius, of Persia; subdued Asia Minor; routed 600,000 Persians at the battle of Issus; subdued Egypt, Tyre, and Libya; conquered Persia; became brutal; pushed his conquests, and reached Babylon, having conquered nearly all existing nations; died while intoxicated at Babylon, B. C. 323.

Alfred the Great—King of the Saxons in England; born at Wantage, Eng., A. D. 849; made successful resistance, on several occasions, to invading Danes, or Northmen; established coast defenses; translated the Bible and other books; was a patron of education and literature; died about 901.

Alvarado, Pedro D.—A Spanish General; born at Badajoz, Spain, about the close of the fifteenth century; was the conqueror of Mexico, under Cortez, and Guatemala; governor of Guatemala and Honduras; killed in a fight with Mexican Indians, in New Galicia, Mex., in 1541.

Alvarez, Juan—A Mexican General; born in Mexico about 1790; drove Santa Anna from power in the revolution of 1855, conquering the republic of Mexico; died in 1867.

Anglesey, Marquis of—A British General; born in England, in 1768; distinguished for valor in Flanders, Holland, Corunna, Waterloo—losing a leg in the latter battle, and was Lord-Lieutenant of Ireland; died in 1854.

Antony, Mark—A Roman Triumvir; born in Italy, B. C. 83; ably seconded Julius Cæsar in his struggle for supreme power, and was made Joint Consul of Rome with him; achieved other national triumphs by his genius and valor, but being defeated in battle at Actium, B. C. 30, he slew himself, was husband of the renowned Cleopatra, who killed herself, on learning of his death, by the sting of an asp.

Attila—King of the Huns; the place and date of his birth are unknown; he swayed the Northern tribes from the Rhine to the Volga; overran Illyria and all the region between the Black Sea and the Adriatic; Thrace, Macedonia and Greece were devastated; marched through Germany into Gaul; invaded Italy, destroying many cities; died suddenly in his camp, A. D. 453 or 454; is supposed to have been assassinated; called himself "the Scourge of God."

Bayard, "Chevalier"—Peter du Terrail—A French knight, distinguished for his valor, virtue, generosity and courtesy, and greatly honored in life and in death; displayed admirable bravery and talents; was born at the chateau de Bayard, in Dauphiny, in 1476; was mortally wounded in battle in the Milanese, at Romagnano, in 1524.

Bernadotte, Jean B. J.—A French Marshal; born at Pau, France, in 1764; was a coadjutor in the French Revolution, and in Bonaparte's campaigns; invaded Sweden and became its king for twenty-six years, during which time the country prospered; died at Stockholm, Sweden, in 1844.

Blucher, Gebhard L. Von—A Prussian Marshal; born at Rostock, Germany, in 1742; served under Frederick the Great, during the seven years' war; retired to agricultural pursuits; recalled to the army in 1786; active in the campaigns of 1792 to '94, distinguishing himself and gaining promotion; participated vigorously in the campaigns of 1813 and 1814; defeated at Ligny by Napoleon, in 1815, and turned the battle of Waterloo into a victory for the English; was made Prince of Wahlstadt; died at Kribowitz, Prussia, in 1819

Bolivar, Simon Y. P.—President of South American republics; born at Caracas, Venezuela, in 1783, wrested Central South America from Spain, and founded the republics of Bolivia and Colombia; died at San Pedro, near Carthagena, Spain, in 1831.

Bonaparte, Napoleon—An Emperor of France, King of Italy, etc.; operated in France, Italy, Spain, Egypt, Russia and Belgium, as the greatest warrior of modern times, in point of ambition, energy and power over men; born at Ajaccio, in the Island of Corsica, in 1769, and died, a lonely prisoner, in the island of St. Helena, in 1821.

Bozzaris, Marco—A patriot and warrior of great distinction; born in Greece, about 1790; made war against the Turks from 1820 to 1823, and was killed in the latter year in the victorious fight at Missolonghi.

Boru, Brian—A native king of Ireland; born at Munster, Ireland, about A. D. 927; overcame the Danes and prosperously reigned, but in a revolt of his own people they were assisted by Danes, and a fight ensued, in which Boru was slain, but the Danes were permanently repulsed; died at Clontarf, Ireland, in 1014.

Bruce, Robert—Earl of Carrick and King of Scotland; born in Scotland in A. D. 1274; bearing his father's name, he fought for the freedom of Scotland from the English yoke, first fighting under the English banner against his competitor for the crown, Baliol; Bruce was crowned at Scone, in 1306, defeated Edward II. at Bannockburn, in 1314, thus firmly establishing his throne; died in 1329.

Brunswick, Charles W. F., Duke of—A Prussian General, born at Brunswick, Prussia, in 1735; served actively in the seven years' war, and his services were celebrated by Frederick the Great in a poem; was mortally wounded at the battle of Auerstadt, in 1806.

Cæsar, Julius—First Roman Emperor; born at Rome, B. C. 100; owing to family affairs, the Dictator Sylla resolved to destroy him, but at the solicitation of friends spared his life; became Chief Pontiff and Prætor, and in B. C. 59 Consul; subdued Gaul; twice invaded Britain; overcame Italy; became Dictator and Consul at Rome; vanquished the Egyptians, and captured Spain; became the victim of a conspiracy formed by Brutus, Cassius and others, and was assassinated in the Senate House, March 15, B. C. 44.

Collingwood, Cuthbert, Lord—English Admiral; born at Newcastle-on-Tyne, Eng., 1750; was at Bunker Hill, America; expedition to Central America; with Lords Howe and Jervis in their victories over the French, 1794, 1797, and with Lord Nelson at Trafalgar, 1805, taking that officer's place when he fell, and finishing the victory; for this he was raised to the Peerage of England, with thanks of Parliament and a liberal pension for his family; died at sea, 1810.

Conde, Princes and Dukes of—Nine members of the younger household of the Bourbons of France, who played important military and political parts in French history between 1530 and 1800; of these Louis II., surnamed the Great, was born at Paris, 1621, and distinguished himself in the wars with Spain, between 1645 and 1650. D. 1686.

Constantine the Great—Emperor of Rome, born at Naissus, in Mœsia, about 274; struggled for the empire with Maxentius, whom he overcame; vanquished Licinus; chastised the Goths; made christianity the dominant religion, and removed the capital from Rome to Constantinople (Byzantium); died at Nicomedia, 337.

Cordova, Francisco Ferdinand de—Spanish General; born at Madrid, 1792; fought in the campaign against Napoleon; minister of war, 1847; in 1849 went to Italy with an army to aid in restoring the Pope; fought against the victorious insurgents in the revolution of 1854, and fled to France; in 1856 he returned to Spain, and in 1864 was made minister of war in the cabinet of Narvæz. Died 1860.

Cortez, Hernando—Conqueror of Mexico; born at Medellin, Spain, 1485; sailed in 1504 for San Domingo, W. I.; received several appointments from the governor; in 1518 fitted out his expedition to Mexico, contrary to the governor's wishes; between March 4, 1519, and August 13, 1521, he waged a war with the Mexicans which resulted in his vanquishing them, and he became governor of Mexico; jealousy at home, however, ruined him, and he died in solitude in Spain, near Seville, 1547.

Crevecœur, Philippe de—French Marshal and Baron; born early in the fifteenth century, in France; distinguished as a soldier under Charles the Bald and Louis VI., and in numerous military and diplomatic undertakings; signed, for France, the treaties of Arras (which gave important territory to France) and England. He also overcame Duke Maximilian in Picardy, taking more territory, and was on his way to conquer Naples, when he died near Lyons, in France, in 1494.

Cromwell, Oliver—Lord Protector of the English Commonwealth; born at Huntingdon, Eng., 1599; became a zealous Puritan; entered Parliament, 1625; opposed King Charles I. in Parliament, and took the field against him, winning victories over the royal troops in numerous well-fought battles between 1642 and 1646, and aided in bringing the king to the scaffold; he then subdued Ireland, after severe fighting, and defeated the Scotch loyalists, in 1651 he reached the summit of his power, becoming Lord Protector in 1653; during his dynasty England was prosperous, respected and feared by other nations; died at Whitehall Palace, Eng., 1658.

Cyrus the Great—His career as a Persian General was foretold by Isaiah more than one hundred years before his birth, but considerable diversity of history surrounds his acts; he was son of Cambyses the Persian; at the age of thirty he was sent with 30,000 men to assist his uncle Cyaxeres, who was about to be attacked by the Babylonians, dispersing the latter; pushed the war into adjoining countries; subdued Cappadocia; captured Sardis, the capital of Lydia; reduced almost all Asia to subjection; returned and fought the Assyrians; captured Babylon after a siege; engaged in several other wars and subdued all the nations between Syria and the Red Sea, and is described in Scripture as "Monarch of all the earth;" he is supposed to have reigned from about 558 to 529 B. C., dying in the latter year, aged 70.

Darius, the Mede—Son of Astyages, King of the Medes; mentioned in Daniel v., 31, ix., 1, and xi., 1; in scripture also called Artaxerxes; in either A. M. 3448 or 3468, he conquered Babylon, dethroning Belshazzar, his sister's grandson, King of the Chaldeans, occupying the throne for about two years, when he died, and Cyrus the Great reigned in his stead. Died B. C. 362.

Darius I., King of Persia—Son of Hystaspes; took Babylon after a siege of twenty months; gave permission for rebuilding the Jewish temple at Jerusalem and sent the captive Jews to their own country; subsequently the Persians invaded Greece, but were defeated at Marathon; while preparing to take the field against the Greeks in person, Darius died B. C. 485.

Darius III., the last King of Persia—Persia being invaded by Alexander the Great, Darius took the field against him in person, commanding an army of 600,000 men; two battles were fought, at Granicus and near Issus; in the latter the Persians were routed, having more than 100,000 men killed; Darius escaped, and afterwards fought the Greeks again, but was defeated and fled; he was found murdered, B. C. 331, in his chariot, the victim of Bessus, governor of Bactriana, who coveted his throne.

Davoust, Louis Nicholas—A French Marshal; born at Annoux, Burgundy, 1770; studied at Brienne with Napoleon; distinguished himself on several occasions in the French army, and went with Bonaparte to Egypt; in the campaigns of 1806 and 1809 he won the titles of Marshal, Duke and Prince, was governor of Hamburgh in 1813, 1814; minister of war under Napoleon in 1815, and commanded the army which capitulated under the walls of Paris; died in Paris, 1823.

Dessaix, Joseph Marie—A French General under Napoleon; born at Thonon, Savoy, 1764; served at the siege of Toulon, in Italy and in the campaign of 1806 against Austria, winning the title of Count of the Empire; commanded at the city of Berlin; in 1813 was intrusted with the defense of France on the line of the Alps, and subsequently was commander of the National Guard at Lyons; died in France, in 1834.

Desaix de Veigoux, Louis Charles Anthony—A celebrated French General, of noble descent; born in Auvergne, 1768; Lieutenant in the army at fifteen; defended Fort Kehl in 1796, commanding a division in the army of the Rhine; accompanied Bonaparte to Egypt, where he was known as "the Just Sultan;" and fell in the battle of Marengo, June 14, 1800, just as he had aided in winning victory over the Austrians.

Dumas, General—A mulatto French officer; born in Jeremie, Hayti, 1762; entered the French army at fourteen, noted for his handsome figure, prodigious strength and great bravery; served under Dumouriez, then in Italy, under Napoleon, and at the battle of Brixen, single-handed, he defended a bridge against the enemy until the French could come to his rescue; he also served with distinction in Egypt; died at Villiers-Cotterets, France, 1806.

Duroc, Girard C. M.—A favorite General of Napoleon's; born near Nancy, France, 1772; Governor of the Tuilleries; employed on important diplomatic missions; served at Austerlitz, in the campaigns of 1806 and '07, in Austria and in Russia. Killed at the battle of Bautzen, while escorting the Emperor to an elevation. Napoleon bought the land where he fell, and erected a monument to his memory thereon; died near Markersdorf, Saxony, 1813.

Edward, Prince of Wales—Known as "the Black Prince," from the color of his armor; son of King Edward III., of England; born at Woodstock, Eng., 1330; accompanied his father to France in 1345, and participated in the great victory of Crecy; ravaged the French dominions, 1355 and '36, and restored "Pedro the Cruel" to the throne of Spain; died in England, 1376.

Espartero, Joaquin B.—A Spanish Grandee; born near Cuidad Real, Spain, 1792; fought the South American insurgents in Venezuela and Peru; favored the succession of Queen Isabella II. to the throne; fought the Carlists successfully in the civil war, 1833-'39; was head of Queen Christina's ministry; succeeded her as regent in 1840; being overcome by Narvaez he retired to England, until 1847, when he returned to Spain, and resumed his lost honors; subsequently became head of Isabella's government, and after her expulsion he supported the provisional government, refusing the crown, which was offered to him, on account of his great age. Died 1879.

Garibaldi, Guiseppe—An Italian patriot; born at Nice, 1807; raised a mariner; in 1834 he was exiled from Italy for exciting a revolution; visited the Black Sea and South America; espoused the cause of the republic of Rio Grande; was repulsed and taken prisoner; escaping, he returned to Rio Grande and joined an expedition against the Brazilians, sometimes on land and sometimes at sea; after the war he settled at Montevideo; this place being besieged, Garibaldi fitted out a flotilla, and the town was saved. He then returned to Spain and participated in the military affairs of 1848, defeating the Neapolitans. Being surrounded by Austrians, he was offered terms of capitulation, which he refused, and he and his adherents fled; but his wife died, he was arrested, banished, and came to New York; made voyages to the Pacific, and returned to Nice; here he joined the Sardinian government against the Austrians; rendered important services during the war to the Italian cause, and in 1860 captured Sicily and became Dictator; afterwards he assisted in the overthrow of King Francis, and the kingdom of Two Sicilies became merged in that of Italy. Garibaldi resigned the Dictatorship and retired to the island of Caprera. Subsequently he reappeared prominently in the troubles in Italy, and incited the Hungarians against the Austrians. In a battle near Aspromonte he was wounded and taken prisoner but was permitted to return to Caprera. Again he repeated his movements for the conquest of Rome, but was upon one occasion arrested, and on the other defeated in battle and taken prisoner, but released as an American citizen. In 1870, when the Republic of France was established, he joined in its national defense, and served in the French army, but without distinguishing himself. He filled a seat in the National Assembly for a time, but resigned and retired to Caprera. He wrote novels and poems, and was undoubtedly one of the most remarkable men of this century. Among his latest acts was the procuring of a divorce from his second wife. Died, June 2, 1882.

Gonsalvo of Cordova, Hernandez A.—A celebrated Spanish warrior, known as "the Great Captain;" born at Montillo, Spain, 1453. He entered upon a military life at fifteen years; distinguished himself in wars against the Moors, Portuguese, Turks and French; was Viceroy of Naples, which kingdom he had conquered; died in Granada, Spain, 1515.

Gaurgaud, Gaspard, Baron—A French General, born at Versailles, France, 1783; attended military schools; entered the army in 1802; fought in the campaigns of Germany, Poland, Spain and again in Germany; went to Russia with Napoleon; at Moscow prevented the explosion of 500,000 pounds of powder, and was created Baron; accompanied Napoleon through numerous battles, saving his life on one occasion; was among the last officers to leave the field of Waterloo, and accompanied his Chief to St. Helena. Returning to England, he worked for the release of Napoleon from exile, and retired to France, where he lived on a legacy from his former friend and commander; died in 1852.

Gough, Hugh Viscount—A British General; born at Woodstown, Ireland, 1779; entered the army in 1794; served against the Dutch in South Africa; in the West Indies; in Spain, distinguishing himself in several important battles; Commander-in-Chief in China, and created a Baronet; transferred to India, with supreme command, he carried on a brilliant and successful campaign against the Sikhs, from 1843 to 1849; superseded by Sir Charles Napier; made a viscount, handsomely pensioned, and created Field Marshal. D. 1869.

Grant, Sir James Hope—A British General; born at Kilgrasten, Scotland, 1808; entered the army in 1826, served in the first English war with China; in India from 1848 to 1858, where he won battles and honors, especially at the siege of Delhi and the relief of Lucknow; commanded in China in 1859; captured Peking in 1860, and so terminated the war, receiving the thanks of Parliament and being made a Knight Grand Cross of the Bath, with subsequent promotions. D. 1878.

Grouchy, Emmanuel, Marquis de—A French General; born at Paris, 1766; entered the French military service at fourteen years, serving a part of the time under Lafayette. From 1798 to 1814 he served with distinction in the army, participating in some of the most distinguished battles and campaigns under Napoleon and others. A wound forced him to retire from the army; but he subsequently, after Napoleon's return from Elba, attached himself to the Emperor's fortunes, becoming a Marshal of France and taking a conspicuous part in his chief's operations. His failure, however, to bring his forces into position at the battle of Waterloo, rather than disobey previous orders, cost Napoleon his signal defeat in that contest. Retiring from France under proscription, he lived five years in the United States, at Philadelphia. He returned to France in 1821, and was restored to his rank. Died 1847.

Havelock, Sir Henry—A British General, distinguished by his brilliant campaign against the Sepoys in India in 1857; born in county Durham, Eng., 1795; entered the British army in 1815; went to India in 1823; participated in the Burmese war of 1824 with distinction, in the invasion of Afghanistan, under Sir Willoughby Cotton, 1838 and 1839, in the Mahratta campaign and in the war against the Sikhs; fought in Persia, 1856; his operations in 1857, in opposition to the Sepoys under the Nana Sahib, however, established his military fame; died near Lucknow, India, of dysentery, November, 1857, receiving a baronetcy from the English government the day after his death.

Joan of Arc, "the Maid of Orleans"—This greatest of heroines was born of humble parents at Domremi, France, 1410; tended sheep and took care of horses at a country inn; but having a mind far superior to her station, and brooding over the sufferings of her country and the means of relieving them until she believed herself called by mysterious voices to become the deliverer of France, she offered herself to the king as a divinely appointed warrior. Her services were accepted, and she took the field against the enemies of her country. Her alleged divine appointment and bravery inspired her followers with enthusiasm, while it depressed the English. Her campaigns were wonderfully successful; city after city was subdued, and the English were everywhere rapidly defeated; fourteen months passed in this brilliant warfare, which closed with the crowning of her sovereign. She now declared her mission at an end, but she was prevailed upon to remain with the army, which she commanded with her wonted bravery. At last, falling a captive into the hands of the English, who bought her from the Burgundians, she was, to their everlasting disgrace, burned at the stake at Rouen, France, in 1431, as a sorceress. In later years, however, this method of her death has been denied.

Juarez, Benito Pablo and Maximilian—Juarez was born at San Pablo Guetatao, State of Oajaca, Mexico, 1806, of Indian parents; educated by a friar; studied law; professor of natural philosophy in the college of Oajaca; admitted to the bar in 1834; was chief judge of the republic in 1842–45; secretary of state under General Leon; chief justice of the superior court. When the Salas revolution in 1846 became a success in Oajaca, he was made one of the governing triumvirate. In 1846 he was a member of the constituent congress that voted money to carry on the war with the United States; became governor of Oajaca in 1847–'52, managing affairs discreetly, liquidating the state debt and having surplus funds. Soon afterwards he was arrested and exiled by Santa Anna, and lived in reduced circumstances for two years in New Orleans. Returning to Mexico in 1855, he assisted in the successful uprising of Alvarez, who afterwards appointed Juarez minister of justice and religion; subsequently President Comonfort appointed Juarez governor of Oajaca; he was re-elected governor in 1857; was also then elected president of the supreme court of justice, and afterwards minister of the interior. Comonfort being ousted, Juarez succeeded him as president of the republic in 1858, being recognized as such by the United States in 1859. In 1861 he defeated Miramon, entered Mexico, and in the following spring was elected president again. In 1862 France declared war against Juarez, with the determination of establishing an empire in Mexico. Juarez was defeated, and Maximilian, Archduke of Austria, assumed the functions of Emperor. Juarez, however, maintained the presidency at El Paso del Norte, and in 1866 began that brilliant military campaign which restored him to the possession of the republic, and resulted in the capture and shooting of Maximilian, in June, 1867. In October Juarez was re-elected president of Mexico. Five years of unsuccessful revolutions against him followed, but peace came in 1872. The health of Juarez, however, failed under all his trials, and he died in Mexico, in 1872, of apoplexy.

Kossuth, Louis—Ex-governor of Hungary; born at Monok, 1802; entered the National Diet as a representative in 1829; for publishing reports of the proceedings of this assembly, he was convicted of high treason and sentenced to four years' imprisonment. Within two years, however, he was liberated on an amnesty; became editor of a newspaper at Pesth in 1841; in 1848 he visited Vienna, the capital of Austria, to press the claims of Hungary upon the government, and returned to Presburg as minister of finance. Under this administration he successfully carried out important measures for the relief of the peasantry under the feudal system, which was swept away. During the civil war of 1848–'49 he was governor of Hungary. The Hungarians having been suppressed, mainly by the armed intervention of Russia, Kossuth retired to Turkey with several political allies and 5,000 troops. By the intervention of England and France, Turkey refused to deliver up Kossuth at the request of Austria and Russia, and he and his followers were retained as prisoners in Asia Minor until 1851. Kossuth then proceeded to England, and sailed for the United States in the autumn of that year. Here he traveled, advocating the cause of Hungary, and was received with great favor. Afterwards he returned to England, residing there for several years, engaged in lecturing and writing for the newspapers. From 1862 to 1875 he resided in privacy at Turin, devoting much time to scientific investigations.

Lopez, Narciso—Cuban revolutionist; born in 1799, in Venezuela, S. A., of wealthy parents; served for some time in the Spanish army, retiring in 1822, while Colonel. After the Spaniards evacuated Venezuela, he went to Cuba, and then to Spain, espousing the cause of Queen Isabella against Don Carlos, the pretender, and became the recipient of several offices, which, for political reasons, he rejected, returning to Cuba. Seized with the idea of Cuba becoming independent of Spain, he came to the United States in 1849, and organized, at the expense of nearly his entire fortune, three separate and unsuccessful expeditions to free Cuba from the Spanish yoke. The last expedition, which sailed in August, 1851, resulted in the capture of Lopez and many of his followers, and his own execution at Havana, September 1, 1851.

Miltiades—Illustrious Athenian General; flourished in the fifteenth century before Christ; reduced Chersonesus, Lemnos and Cyclades, and before Christ, 490 years, fought and overcame the invading Persian army at Marathon; accused of treason by his countrymen, he was thrown into prison, where he died of a wound received in fighting for Grecian independence; died B. O. 489.

Moltke, Helmuth K. B. Von—A German General; born at Parchim, Germany, 1800; at eighteen became an officer; entered the Prussian service in 1822; went to Constantinople in 1835, and improved the Turkish government's fortifications, and fought for the Sultan in the wars against the Kurds and Egypt; returned to Prussia in 1839; in 1856 became the adjutant of Prince Frederic, and in 1858 chief of the general staff of the army; in 1859 he was made Lieutenant-General; figured largely in the wars with Denmark (1864) and Austria (1866). When the war with France began, in 1870, his plans resulted in a series of astonishing and continuous victories. He was rewarded by the title of Count and large donations of money, etc.; was made a General Field Marshal in 1871, and life member of the upper house of the Prussian parliament.

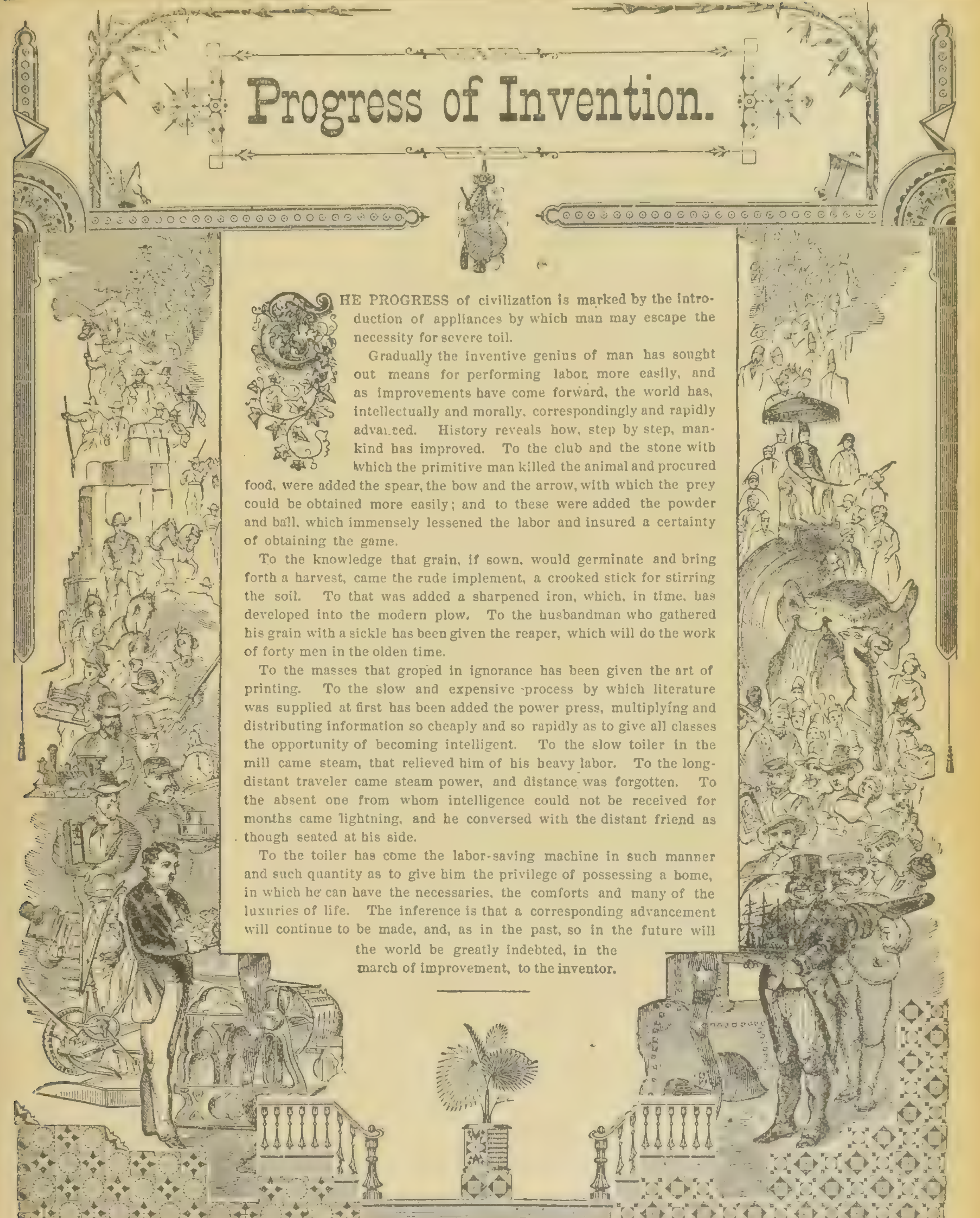
Nero, Lucius Domitius Claudius—A Roman emperor; born at Antium, Italy, in 37; succeeded Claudius, who was murdered, in 54 as Emperor, and proved to be one of the basest of tyrants. The story of his life is a catalogue of cruel crimes, while the success of the Roman army during his reign was glorious. A rebellion against this tyrant, in 68, proving successful, he committed suicide.

Pizarro, Francis—Born at Truxillo, Spain, in 1475, and while a boy ran away to Spanish America. In 1524 he discovered Peru, in connection with Almagro, and Charles the Fifth made him Governor of the new-found country, over which he achieved the conquest in 1532. In 1537 a contest between him and Almagro terminated in the defeat and execution of the latter. Almagro's son, in revenge, in 1541, aided by some friends, assassinated Pizarro in his palace at Lima, Peru.

Pompey, Cneius—Known as Pompey the Great; a Roman statesman and warrior; born 106 B. C.; at the age of twenty-three, with the party of Sylla, and commanding three legions, he recovered to Rome, Sicily and Africa; ended the war in Spain, and considerably extended the Roman Empire in Asia; married Cæsar's daughter. In a few years dissensions arose between Cæsar and Pompey; civil war ensued, and Pompey was defeated in the battle of Pharsalia. He then fled to Egypt, where he was assassinated, B. C. 48.

Poniatowski, Prince Joseph—Illustrious Polish General; born at Warsaw, 1763; distinguished himself in the cause of Poland during the unhappy struggles of 1792 and '94; entered the French army, and exhibited conspicuous bravery and talent in the campaigns between 1806 and 1814; was made a Marshal on the battle-field at Leipsic, and was drowned in the river Elster; 1813.

Santa Anna, Antoni Lopez de—A Mexican General; born at Jalapa, Mex., 1798; entered the Spanish army, becoming Lieutenant-Colonel in 1821; joined Iturbide in 1822 in overthrowing Spanish rule and reducing the province of Vera Cruz; Iturbide was in turn overthrown by Santa Anna, who proclaimed himself emperor. The Mexican Republic was formed soon afterwards, and from that time until 1833 Santa Anna was engaged in fighting against or maintaining, at the head of Mexican troops, the claims of rival chiefs. In 1833 he became president, retaining the office for three years, at the end of which time he was taken prisoner at San Jacinto by political opponents. After his liberation, in 1837, he lost a leg while engaged in repulsing French troops at Vera Cruz. From 1841 to 1845 he was again president of the republic. In 1845 he was exiled for ten years, but was recalled to the presidency and to protect Mexico against the United States army. In several encounters with Scott and Taylor, the American Generals, his forces were defeated, and in 1848 he was compelled to resign. From 1852 to 1855 he was president once more, and was then driven into exile again by the revolt of General Carrera, living peaceably for some years at St. Thomas. After that, he participated more or less quietly in Mexican political changes, but without any notable success. Died, June 20, 1876.



Progress of Invention.

THE PROGRESS of civilization is marked by the introduction of appliances by which man may escape the necessity for severe toil.

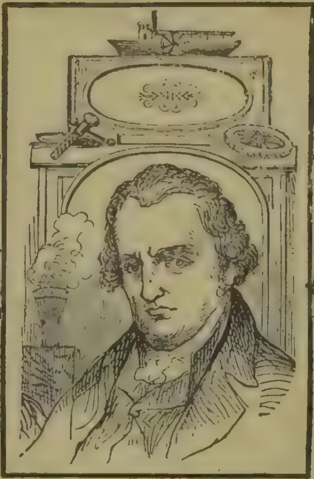
Gradually the inventive genius of man has sought out means for performing labor more easily, and as improvements have come forward, the world has, intellectually and morally, correspondingly and rapidly advanced. History reveals how, step by step, mankind has improved. To the club and the stone with which the primitive man killed the animal and procured food, were added the spear, the bow and the arrow, with which the prey could be obtained more easily; and to these were added the powder and ball, which immensely lessened the labor and insured a certainty of obtaining the game.

To the knowledge that grain, if sown, would germinate and bring forth a harvest, came the rude implement, a crooked stick for stirring the soil. To that was added a sharpened iron, which, in time, has developed into the modern plow. To the husbandman who gathered his grain with a sickle has been given the reaper, which will do the work of forty men in the olden time.

To the masses that groped in ignorance has been given the art of printing. To the slow and expensive process by which literature was supplied at first has been added the power press, multiplying and distributing information so cheaply and so rapidly as to give all classes the opportunity of becoming intelligent. To the slow toiler in the mill came steam, that relieved him of his heavy labor. To the long-distant traveler came steam power, and distance was forgotten. To the absent one from whom intelligence could not be received for months came lightning, and he conversed with the distant friend as though seated at his side.

To the toiler has come the labor-saving machine in such manner and such quantity as to give him the privilege of possessing a home, in which he can have the necessaries, the comforts and many of the luxuries of life. The inference is that a corresponding advancement will continue to be made, and, as in the past, so in the future will the world be greatly indebted, in the march of improvement, to the inventor.

JAMES WATT.



Born, January 19, 1736.

Died, August 25, 1819.

Distinguished for Invention of Means by which to Utilize the Power of Steam.

JAMES WATT, born at Greenock, Scotland, January 19, 1736, was a sickly child, who, unable to attend school, was left to follow his own inclinations.

His father, who was a mathematical instrument maker, furnished the boy tools, and with them he found amusement and instruction. The child early evinced mechanical and inventive talent, and at fourteen had constructed an electrical machine.

Gradually as his health improved, he entered upon a course of study, from which, beside having a good knowledge of philosophy, he became very proficient as a mathematician. He went up to London when nineteen years of age and engaged with one Morgan as a mathematical instrument maker. He afterwards returned to Glasgow, and at twenty-three began to study the principles of the steam engine.

It is not claimed that he was the originator or discoverer of the power of steam. The idea of the steam engine is said to have been conceived by Hero of Alexandria, who flourished 2,000 years ago, and it is said invented a rotary engine, since which time a long line of experimenters have followed.

In 1763 Watt commenced a series of experiments relating to the power of steam which finally resulted in his invention of the condensing engine. Nine years he struggled with poverty to make a practical application of this improvement. Difficulties rose up before him on every side. The necessary tools were not in existence, and he had no money with which to make them. Added to this perplexity, also, was his extreme aptitude for invention. No sooner had he determined upon perfecting an idea, and had commenced to carry it to fulfillment, than an improvement in another direction would take possession of his mind so firmly that he felt he must give it heed.

His want of executive talent was shown in his attempt to superintend the building of a canal, his poverty compelling him to accept the situation at 200 pounds a year. Nervous and retiring, he shrank from giving orders to the workmen. He would go a long distance out of his way rather than make a close bargain, and the details of the business he greatly disliked. The result was that at the expiration of eighteen months of trial he abandoned the work, and retired very much discouraged; his misfortunes being augmented about this time by the death of his wife, who had done much to sustain him in his darkest hours.

It was at this period that an interest in his invention fell into the hands of Matthew Boulton, a large hardware manufacturer of Birmingham, who, having wealth and foresight to see the merit of the invention, joined heartily with Watt in his endeavors, and together, as partners, they carried the engine forward to such success that the great Birmingham manufactory, which employed, under Boulton, 1,000 workmen, was ultimately driven to its fullest capacity to supply the demand for steam engines.

Among the difficulties that Boulton and Watt had to contend with at first was an extreme jealousy among workingmen from fear that the engine would deprive them of labor. Boulton was at various times threatened with personal injury, and the clamor against Watt was severe; but, as time passed on and new avenues of employment multiplied through this labor-saving device, the ill-feeling died away and Watt was declared a benefactor.

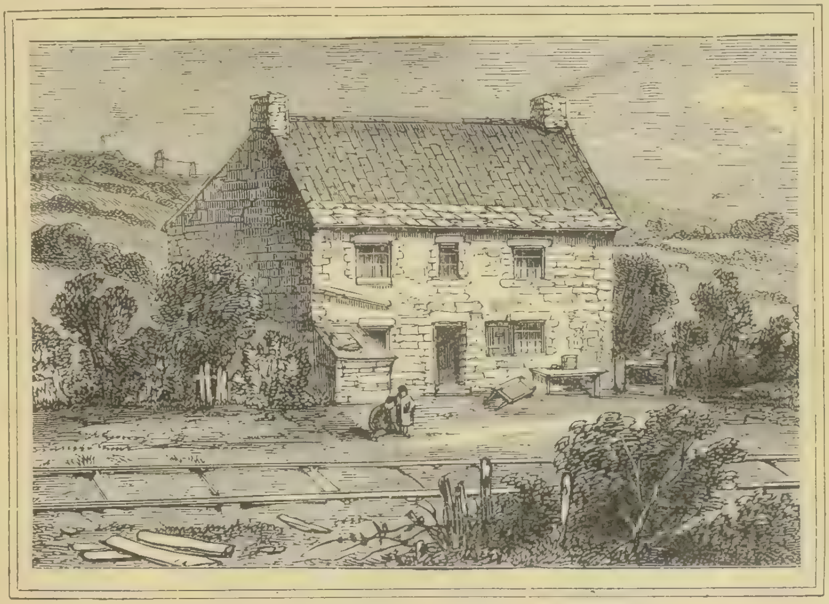
After-years brought other inventions of his, among them being house-warming by steam and the copying press. He died August 25, 1819, at the advanced age of eighty-three.

George Stephenson.

AT WYLAM, about nine miles west of Newcastle-upon-Tyne, in a poor cottage, with a clay floor and unplastered walls, George Stephenson was born June 9, 1781.

The father of George was a fireman, whose wages brought him but 12 shillings a week. With a wife and six children to support from this sum, there was nothing to expend for education. To satisfy the cravings of hunger was the first impulse, and as soon as opportunity offered the children were put to earning the means of support.

2½ pence a day were George's first earnings in looking after Widow Ainslie's cows. Later, he received 2 shillings a week, when caring for horses. Afterwards he got 4s. a week as an assistant to his father; and, at the age of sixteen, he was appointed to work at a pumping-engine, at twelve shillings a week.



House Where George Stephenson was Born, at Wylam, England.

Receiving a man's wages, he was delighted, and in all his subsequent triumphs as a locomotive builder, it is doubtful if he was ever happier than when he was elevated to the position as an attendant upon the pump-engine.

At the age of eighteen, he could neither read nor write, but, possessed of a thoughtful, meditative mind, he then commenced attending a night-school, and a year afterwards could spell words, was able to write his own name, and had begun to get an insight into arithmetic.

When not engaged in his labors throughout the day, he sought to improve his position by becoming proficient in his work. He took his engine to pieces and studied every part. He was never idle. The result of his spirit of inquiry and ambition was, that he was rapidly advanced through all the grades of engineering.

He married at twenty-one, and settled in a little cottage at Willington Quay. Here, in his home at evenings, he studied mechanics, the effort to get perpetual motion coming in for a share of his time. His clock subsequently getting out of order, he took the same to pieces, and out of the remnants of his machine for perpetual motion, he put it in good order. He forthwith became the clock-repairer of the neighborhood.

From one position to another he advanced. It was in 1813, and he was thirty-two years old, when he told his employer, Lord Ravensworth, that he believed he could make a steam-engine that, placed on wheels over the tramways then in use, would profitably take the place of horses.

Steam-carriages were then a fact. Locomotive-engines had been actually then employed; therefore, Stephenson could in no sense be said to be the inventor of this means of locomotion. But, although the steam-engine on wheels was a reality, it had not yet been made practicable.

As Watt successfully applied steam as a power, so it was left for Stephenson to successfully put the steam-engine on wheels for the rapid transport of heavy burdens.

Lord Ravensworth furnished the money, and in the workshops at West Moor, Killingworth, Stephenson, with the aid of the colliery blacksmith, constructed a locomotive that would draw, at the rate of four miles an hour, eight loaded carriages of thirty tons each. The affair, although clumsy, was pronounced a success; and improvements went forward from that time until, in 1825, over the Stockton and Darlington railway, Stephenson drove an engine that drew ninety tons at the rate of a little more than eight miles an hour.

The great engine works which he, with his son, established at Newcastle, and the network of railways throughout England and the world, stand as ever-living monuments of the perseverance and inventive genius of George Stephenson, who, in his sixty-seven years of life, had lived to see, through his own effort, the speed of travel increased from stage-coach pace to the velocity of the rapid-running locomotive.

Stephenson died at Tapton house, near Chesterfield, August 12, 1848, leaving a great fortune, mostly to his only son Robert, who also became one of the most distinguished engineers in England.

IMPORTANT DATES OF INVENTIONS

At Different Periods of the World's History.

ACCORDIONS—Invented by Damian, of Vienna, Austria, 1829.

Æolian harp—First described by Kircher, a German, in 1653; but it was earlier known.

Air-brakes—Invented by George Westinghouse, in America, 1869; improved by J. W. Gardiner, 1872; by Henderson, 1872, and by Fogelburg, 1872.

Air-guns—Invented in Germany, by Guhr, 1656; in America, by Shaw, 1849.

Air-pumps—First made in Madgeburg, Germany, by Otto Guericke, 1650.

Alcohol—Was known in the thirteenth century, and manufactured in France in the fourteenth century.

Ale—Was known as a beverage 404 years before Christ.

Algebra—Is traced to Diophantus, a Greek, in the fourth century: known in Europe in 1300.

Almanacs—First printed in Hungary, by Hkus, in 1470; in England, 1673, and in Philadelphia, Pa., by William Bradford, 1686.

Alphabet (Ionic)—Introduced 339 years before Christ; Cadmus brought letters from Phœnicia into Greece 1493 years before Christ: Athotes is said to have been the author of hieroglyphics, and to have written history with them 2122 years before Christ.

Amalgamator—Invented in America, by Varney; improved by Hill, 1861; Coleman, 1863; Wheeler, 1863; Heath, 1863; Dodge, 1864; Brodie, 1864; Moore, 1865; Peck, 1865; Charles, 1866; Staats, 1866.

Anchors—Were invented by the Tuscans; improved by Apacharsis in Scythia, 592 years before Christ.

Anemometer (wind-measure)—Invented by Wolfus, 1709: measures force and speed.

Apple-parer—Invented by Contes, 1803; improved by Gates, 1810; Mitchell, 1838; Pratt, 1853.

Aniline-colors—For dyeing, discovered by Unverdorben, 1826.

Areometer—For measuring liquid density and gravity, described by Baume, 1768.

Argand Lamp—Invented by Aime Argand, 1789.

Armstrong-gun—Invented by Armstrong, 1855.

Atmospheric railways—Atmospheric pressure discovered by Papin, 1680.

Backgammon—Invented in Greece, by Palamedes, about 1224.

Bagpipe—Invention traced to early Greece; probably 200 years or more before Christ.

Balloons—Invented by Montgolfier, France, 1782.

Banks—Known at Athens, Greece, 385–322 before Christ; at Rome, 352 before Christ; in Venice 1157; Bank of England established, 1695.

Barometers—Invented 1626.

Battery-gun—Invented by Gatling, 1861; by Hardy, 1862; Taylor, 1871; Dodge, 1856.

Bayonets—Invented at Bayonne, France, about 1647-1690.

Beer—First introduced into England, 1492; in Scotland as early as 1482. (See ALE.)

Bellows—Invented (it is claimed) by Anacharsis, in Scythia, about 569 years before Christ.

Bells—Invented by Paulinus, Bishop of Nola, Campagna, about 400; first used in France, 550.

Bessemer-steel—Invented in England by H. Bessemer, 1856; improved by him, 1861 and 1862.

Billiards—Origin unknown; claimed to have been invented in France, by Devigne, about 1471.

Blankets—First made in England, in 1340.

Blast-furnace—Invented by Detmold, 1842; improved by Van Dyke, 1860.

Blood—Circulation discovered in England, by Dr. Harvey, 1617. Was known to the ancients.

Bombs—Alleged to have been invented at Venlo, Holland, 1495.

Books—In their present form, invented by Attalus, King of Pergamus, 887; first printed in England, by Caxton, 1474.

Book-keeping—Double-entry originated in Venice, in the fifteenth century.

Boot-crimper—Invented by Moore, 1812.

Boots—Invented 907 years before Christ.

Bottles (glass)—Made at Pompeii, in the first century.

Bows and Arrows—Introduced in England, 1066.

Brandy—Made in France early in 1300.

Brass—Copper and zinc combined—known to early nations; patent to Emerson, in England, 1781.

Bread—Of great antiquity; first made with yeast in England, 1634.

Breech-loading Fire-arms—Invented by Thornton and Hall, 1811; improved by Ballard, 1851; Chassepot, 1867.

Bricks—First used in England by the Romans about A. D. 44; size fixed by King Charles I., 1625.

Bridge (stone)—Ancient in China; first built at Bow, England, 1087; first wooden one at Croyland Abbey, 943.

Buckles—Invented about 1680.

Bullets (stone)—Used in 1514; iron ones first mentioned, 1550; of lead, in the seventeenth century.

Calico-printing—The Dutch-loom engine used first in 1670; calicoes first made in Lancashire, England, 1771; brought to England from India, 1631.

Camera Obscura—Invention claimed for Roger Bacon, 1290, and for Baptisa Porta, sixteenth century.

Candles (tallow)—Substituted for prepared wood-splinters, 1290.

Cannons—Invented in 1330; first used by the English, 1346; first made of iron in England, 1547.

Caps—First worn in 1449.

Cards (playing)—Invented for the amusement of King Charles VI., 1380.

Carriages—Introduced into England, 1580; in Vienna, Austria, 1515; in France, 1559.

Carpets—Introducted into France from the East, 1589-1610; made in France, 1664.

Carte-de-visite (photographic)—First made by Ferrier, in Paris, 1857.

Cast-iron pavement—First used in London, England, 1817.

Cast-iron plow—Invented by Newbold, 1797.

Chain-shot—Invented by De Witt, the Dutch Admiral, 1666.

Chess—Invented 608 years before Christ.

Chimes (on bells)—Invented, 1487.

Chimneys—Introduced into England in 1200.

China (earthenware)—Made at Chelsea, England, 1752-1760; by Wedgwood, 1762; at Dresden, Saxony, 1706.

Chloral—First obtained by Liebig, 1831.

Chloroform—Discovered by Samuel Guthrie, 1831; first used in surgical operation at Boston, 1846.

Circular-saw—Invented by Bentham, in England, 1790; improved by Trotter, 1804, and by Brunel, 1805 and 1809; first saw-maker's anvil brought to America, 1819.

Clarionet—Invention claimed for John C. Denner, of Leipsic, 1690.

Clocks (water)—First used in Rome 158 years before Christ; church clocks and dials, first put up in 913; clocks made to strike the hours, in Arabia, 801; clocks with pendulums, invented in England by Harris, about 1641; repeating clocks and watches, in England, by Barlow, 1676; brass clocks by Jerome, in America, about 1820–'25.

Cloth (woolen)—Introduced into England 1191; first manufactured there, 1390.

Coal—Discovered in England, near Newcastle, 1234; sea-coal used for fuel, 1350.

Collodion—Used in photography; originated by F. S. Archer, 1851.

Coin (silver)—First made by Phidon, King of Argos, 869 years before Christ; in Rome, 269 before Christ: gold coin first used in the East: first coined in Venice, 1346: English guineas, 1673; coining with a die, invented 1617; copper money first legally coined in England, 1689; in Scotland, 1466.

Comets—Halley's identified, 1682; Encke's discovered, 1818; Biela's noted, 1826; Donati's, first observed at Florence, Italy, 1858.

Compass (seaman's)—Invented in China, 1120 years before Christ; "variation" discovered by the Chinese, and noticed by Columbus; the "dip" discovered 1756, by Robert Norman, of London.

Concrete pavement—Invented by Straub, 1863; improved by Prescott, 1872, and by Bellamy, 1875.

Copper—Its discovery is said to have preceded that of iron, and it was known to the ancients; the first copper cent was made at New Haven, Conn., 1687.

Corn-sheller—Invented by Phinney in 1815; improved by James, 1819.

Cotton-gin—Invented by Eli Whitney, 1793; improved by Whipple, 1840, and Parkhurst, 1845.

Curved Stereotype Plates—Invented by Cooper, 1815.

Cutting glass (by sand-blast)—Invented by Teghlman, 1870.

Daguerreotype Miniatures—Produced in France by M. Daguerre, 1838.

Dahlgren-gun (cannon)—Invented by Admiral Dahlgren, U. S. N., 1861.

Dancing—Attributed first as a time-movement to the Curetes, 1534 years before Christ.

Davy Safety-lamp (for miners)—Invented by Sir Humphrey Davy, England, 1815.

Diamonds—First cut and polished at Bruges, Belgium, 1489.

Dice—Invented 1500 years before Christ.

Dictionary — The earliest known was in China, about 1100 years before Christ; the oldest Greek dictionary dates back to the days of Augustus; a Latin dictionary was compiled in the first Christian century.

Distilling—First practiced, 1150.

Diving-bell—Probably invented about 1509, and improved in Holland about 1670.

Dominoes—As a game, is traced to the Greeks, Hebrews and Chinese.

Draughts, or Checkers—Has been played in Egypt 4000 years; introduced into Europe three or four centuries ago.

Drummond-light — Invented by Lieutenant Drummond, 1826.

Drums—Invented in the East, and introduced by the Moors into Spain, 713.

Earth-closets — Invented by Moule & Girdlestone, 1860.

Ebonite-hard Rubber — Invented by Charles Goodyear, 1849.

Engraving on Metal — Invented, 1423; on copper, 1511; on wood, in Flanders, 1423, and revived by Albert Durer, 1511; on glass, at Paris, by Bondier, 1799; etching on copper with acid introduced, 1512.

Electric Light — Invented by Stalte & Petrie about 1846; improved by Duboscq, in 1855; Serrin, 1862, Holmes, 1858; Dumas and Benoit, 1862; Jablakoff, about 1878; Edison, 1879.

Electrical machine — Invented by Von Guericke, 1647; the Leyden jar, invented at Leyden, about 1745.

Electrotype — Invented by Spencer, 1837; improved by Jacobi, 1838; Robert Murray, 1840.

Elevated railway — Invented by Sargent, 1825; improved by Andrew, 1861.

Envelopes (for letters)—First used in 1839.

Fairbank's platform Scales—Invented by Thaddeus Fairbanks, 1831.

Fairs (or market fairs) — First instituted in England by King Alfred, 886; called fairs because they were first held on holidays.

False hair—Introduced by courtesans in Italy, and carried to England from France, 1572.

Fire-engines—Existed in ancient times; the modern style invented by Vanderheides, in Holland—time unknown; invented, also, at Augsburg, 1518; first known at Paris, 1699.

Flint gun-locks—Invented, 1630.

Forks—First known in Italy toward the close of the fifteenth century; introduced in England, 1608.

Galvanism — Investigated and results announced by Galvani, 1791; galvanic battery constructed by Volta, 1800.

Gas — First extracted from coal by Clayton, 1739, first used as an illuminator by Murdoch, in England, 1792; first used in Paris, 1802; in New York, 1834.

Gas-meter—Invented either by Clegg, 1815, or Robinson, 1831.

Geometry — Ascribed to early Egyptians; Euclid's elements compiled about 300 years before Christ.

Glass — Origin uncertain; introduced in England, 674; window-glass first made there, 1557.

Gold—A metal known in the remotest times; first discovered in California in 1848.

Gold-leaf gilding—Invented by Margaritone, 1273.

Grist-mills—Invented in Ireland, 214.

Guineas—First coined, 1673; so-called because made of gold brought from Guinea, Africa.

Guns—Invented, 1330; used by Moors in Spain, 1344; English guns made of iron, 1547; of brass, 1635; bombs and mortars invented, 1543.

Gun-cotton—Invented by Schonbein, 1845–'46.

Gunpowder — Known to Hindoos 355 years before Christ, but attributed to Roger Bacon, in England, who lived between 1214 and 1292.

Gutta-percha — Invented by Montgomery, 1843; its vulcanization invented by Goodyear, 1836.

Handkerchiefs — First manufactured at Paisley, Scotland, 1743.

Harvesters — Invented by Cyrus H. McCormick, 1831; improved by Palmer & Williams, 1851, by Wheeler, 1852, Densmore, 1852; Gove, 1859; Kirby, 1859; Mayall, 1859, Manny, 1875.

Hats—First made in London, 1510; at Paris, 1404

High Towers—First erected on churches, 1000.

Horse-railroad—First built, 1826-'27.

Horse-shoes—Known to the ancients but not brought into general use until the ninth century.

Hour-glasses — Invented in Alexandria, Egypt, 240.

Howitzer—Invented by Paixhans, 1822.

Ice-making machine — Invented by Carre, 1860; improved by Boyle, 1872; by Martin & Beath, 1872, and by Beath, 1875.

India-rubber manufacture — Invented by Chaffee, 1836; improved by Goodyear, 1844.

Inhalation of Ether (to prevent pain)—Discovered by Morton, 1846.

Iron-clad ships—Were used by the Normans in the twelfth century; the first iron steamship was built in 1830.

Jupiter's moons — Discovered by Galileo, 1610.

Kerosene—First used for illuminating, 1826.

Knitting machine — Invented by Hooton, 1776; improved by Lamb, 1865; knitting stockings by hand, invented in Spain about 1550.

Knives — First used in England, 1559; first made there, 1563.

Lace — Invented (it is claimed) by Barbara Uttmann, in Germany, about the middle of the sixteenth century; also, claimed by Italy and Flanders, about a century earlier.

Lanterns—Invented in England by Alfred the Great, 890.

Lamp-black manufacture — Invented by Mini, 1844.

Lathe (for turning irregular forms)—Invented by T. Blanchard, 1843—such as axe-helves, etc.

Lead water-pipes—First used in 1236; lead-pipe machine, invented by Alderson, 1804; improved by Dobbs, 1820, and Hague, 1822.

Life-boat — Invented in England by Greathead, 1802.

Lightning-rods—Invented by Franklin, 1752.

Liquor-metre—Invented by Pontifex, 1824; improved by Tice.

Linen—Previously made on the continent of Europe; first manufactured in London, 1386.

Lithographic printing — Introduced into England, 1801.

Locomotives (for railroads) — Invented by Trevethick, 1802; first one in America, 1830; improved by scores of inventors.

Looms — An ancient invention; the Jacquard loom for figured fabrics, invented by Jacquard, in France, 1800.

Lucifer-matches—First made, 1839.

Magic Lantern—Invented in England, by Roger Bacon, 1252.

Magnifying-glasses — Invented by Roger Bacon, 1260.

Maps and Globes — Invented by Anaximander 600 years before Christ.

Matchlocks (for guns)—Invented, 1567; superseded by the flint-lock, about 16[illegible].

Metallic Washboards—Invented by Rice, 1849.

Melodeons—Invented by Carhart, New York, 1836.

Microscopes — First used in Germany, 1621; solar microscopes invented, 1740.

Military School — Established in France, 1751; at West Point, N. Y., 1802.

Minie-rifle — Invented by Minie, a French officer, 1833.

Mirrors—Anciently made of polished metal; glass mirrors are mentioned in A. D. 23-79; not again until 1300, when they were made in Venice.

Mowers and Reapers—First mentioned by Pliny, A. D. 60. (See HARVESTERS.)

Musical Notes — Invented, 1070; improved, 1330; first printed, 1473.

Muskets—Were in use about 1521.

Nail machine—Invented by Wilkinson, 1775; improved by Gifford, 1790; Reed, 1786; Cochran, 1794; Haddock, 1870.

Navigable Canal—First built in England, 1134.

Needles—First made in England, 1545; improved by Greening, 1560.

Needle-gun — Invented by Blittkowskie and Hoffman, 1856.

Newspaper—First issued monthly at Venice, about 1536; first in England, 1622; first in America, 1704

Newspaper Advertisements — First appeared, 1652.

Nickel—Was discovered by Cronstedt, 1751.

Normal Schools—First organized in Prussia, 1735, in Massachusetts, 1839.

Omnibuses—First appeared in Paris, 1825; in London, 1829, and in New York, 1830.

Organs—Invention ascribed to Archimedes 220 years before Christ; to Ctesibius, about 100 years before Christ, and to an unknown inventor, A. D. 758; the principle of the American reed-organ was discovered by Alexandre, in Paris, about 1835.

Padlock—Invented in Germany, 1540.

Paper-hangings—First known patent issued to Lanyer, an Englishman, in 1634, although it is asserted that they were introduced in France in 1620, by Francois.

Paper (cotton manufacture)—Was in use in the year 1000; linen manufacture, 1319; white paper made in England, 1690, and made from straw in 1800.

Paper-bag machine—Invented by Wolle, 1853; improved by Goodale, 1855; Rice, 1857; Armstrong, 1860.

Paper-money—First used in America in 1740.

Papier-mache—Invented by Lefevre, 1740.

Parlor-skates—Invented by Plympton, 1863; improved by Pollitt, 1870.

Parrott-gun—Invented by Parrott, 1862.

Paving (with stones) — First introduced in Paris in 1786.

Pearl-ashes—Manufactured in Ireland, 1783. The first recorded patent issued by the United States Government was, for pearl-ashes, July 31, 1790, to Samuel Hopkins.

Pendulums (for clocks)—Invented, 1656.

Pens—Quills are stated to have been used A. D. 553, and others say not until 635; steel pens first produced by Wise, of Great Britain, 1803; improved by Gillott, 1822.

Penny-post — Introduced into London and suburbs, by Murray, 1681; adopted by the government, 1711; made a twopenny-post, 1801.

Percussion-caps (for guns)—Came into use between 1820 and 1830; inventor unknown.

Phonography (short-hand writing)—Invented by Pitman, England, 1837.

Phosphorus — Discovered by Brandt, of Germany, 1669.

Photography—The action of light on chloride of silver, was known in the sixteenth century; the original Daguerreotype (which see) has been superseded by other processes; negative photographs date back to 1839 or beyond; collodion first used by Archer, 1851.

Pins—Were brought from France, 1543, and first used in England by Catharine, queen of Henry VIII.

Piano-forte—Invention claimed for Cristofali before 1711; for Marius, 1716, and for Schroter, 1717.

Pistols—Used by French cavalry as early as 1544.

Pitch and Tar—Made from coal in England, 1779.

Planing-machine—Invented by Woodworth, 1828; improved by Stover, 1861.

Plaster-casts (from faces) — Invented by Verrochio, 1470.

Pneumatic railway—Invented by Pinkus, 1834; improved by Henry, 1845.

Post-office—First established in Paris, 1462; in England, 1581; in English America, 1710; first mail by stage-coach started August 2, 1785.

Post-mark Stamp — Invented by M. P. Norton, 1859.

Power-loom—Invented by Cartwright, 1785; improved by Bigelow, 1857; by Marshall, 1848.

Printing—Practiced by the Chinese fifty years before Christ, and they are said to have used movable types in A. D. 900; about 1439 the art was re-invented in Germany by Gutenberg, Faust & Schoeffer; the latter invented matrices for casting separate letters; Caxton introduced printing into England between 1471 and 1474; the first press in America is traced to the city of Mexico, in the sixteenth century; first printing in New England, Cambridge, Mass., 1639.

Printing in Colors — First introduced in 1626.

Printing-presses — Inventor of hand-press unknown; improved by Earl Stanhope about 1800; cylinder-press patented about 1790; steam-power applied, 1811.

Puddling-furnace—Invented by Cort, 1781; improved by Dank, 1875.

Punctuation — Known to the ancients, the modern system is attributed to a grammarian named Aristophanes, at Alexandria, Egypt, and first systematically adopted at Venice about the close of the fifteenth century.

Quicksilver—First used for refining silver ore, 1540.

Quinine—Discovered by Pelletier and Caventou, 1820.

Railroads — Wooden rails used in England about 1602; cast-iron-edge rails, 1789, first wooden railroad in the United States, Pennsylvania, 1806; first iron track road laid in Massachusetts and Pennsylvania, 1827.

Railroad cars — Invented by Knight, 1829; improved by Winans, 1834: by Imlay, 1873.

Reaper—See HARVESTER.

Revolver — Invented by Colt, 1836; improved by Sharp, 1850; Smith and Wesson, 1863; Starr, 1864: White, 1875; several others, 1864, and by Remington, 1863.

Rifle (repeating) — Invented by Sharp, 1848; improved by Henry, 1852. Spencer, 1848.

Rifle (common) — Invented by Whitworth, about 1850.

Ruling-machines — Invented in London, 1792.

Sabbath schools—First introduced in England, by Robert Raikes, 1781; in America, at Ephrata, Pa., by Ludwig Hacker, between 1740 and 1747.

Saddles—Used in the third century; of leather, mentioned in 304; known in England about 600; side-saddles, 1380.

Saws—Invention claimed for Dædalus or Talus or Perdox, ancient Grecians; saw-mills in Madeira, 1420; in Norway, 1530; in England, 1663.

Savings-banks — Founded in Hamburg, Germany, 1778; in Philadelphia, Pa., 1816.

Scenes—First introduced in theaters, 1533.

Seeding-machine — Invented by Cahoon, 1857; improved by Brown, 1863.

Sewing-machine—Patent granted to Weisenthal, in England, 1755; improvement by Alsop in England, 1770; invention patented in England by Winter, 1807. invention by Thimmunier, 1834, first complete machine for general use patented by Elias Howe, Jr., of Massachusetts, September 10, 1846; improved by Singer, 1850; by Howe, 1846; by A. B. Wilson, 1851; Grover & Baker, 1851; T. E. Weed, 1854. Gibbs, 1857, and numerous others.

Ship-building — Attributed to the early Egyptians, first treated as a science, 1696; ships first copper bottomed, 1837.

Silk—Supposed to have been first brought from China; silk-worm raising and working the silk, practiced in Europe, about A. D. 555; first silk made by machinery in the United States, 1829, in Connecticut.

Shoes (modern styles)—First worn in England, 1633; sandals, or sole-shields, strapped to the foot, appear to have been the earliest form.

Shoe-pegging machine — Invented by Gallahue, 1858; latest improvement by Budlong, 1863.

Sleeping-cars — Invented by T. T. Woodruff, 1856, improved by Wheeler, 1859; by Field and Pullman, 1865, by Lucas, 1875.

Soda-water apparatus — Invented by North, 1775.

Soap — According to Pliny, was invented by the Gauls; first made in London, 1524.

Spectacles—Invented by Spina, at Pisa, Italy, 1299.

Spinning-jenny—Invented by Hargreaves, in England, 1767.

Spinning-mule — Invented by Crompton, in England, 1779.

Spinning-wheel — Invented by Jurgens, at Brunswick, 1530.

Square-hole auger—Invented by Branch, 1826.

Steamboats—Successfully tried at Barcelona, Spain, by De Garry, June 17, 1543, but abandoned as impracticable; ancient coins represent paddle-wheel boats before the Christian era; tried on the Conestoga river, by model, by William Henry, of Chester, Pa., 1763; tried on the Potomac river, Va., by Rumsey, at four miles an hour, 1786; in Scotland, on the Forth and Clyde canal, by Smyngton, 1789, by John Fitch, on the Delaware river, 1790, and at New York in 1796; by John Stevens, 1804; Fulton's steamboat navigated the Hudson river, 1807; first steamboat from England to India, 1825; first from the United States to England, 1819; used on the Thames river, England, for passengers, 1815; screw propellers invented by Ericsson and Smith, patented 1836.

Steam-carriage—Invented by T. Blanchard, 1825.

Steam-engines—Crudely developed about 120 years before Christ, by Hero, of Alexandria, Egypt; between A. D. 1580 and 1663 three persons conceived the idea of using steam to raise water: this principle patented by Captain Savery, in England, 1698; an engine worked by a piston moving in a cylinder was constructed at Dartmouth, England, 1705, by Newcomen; but James Watt made the first perfect engine in England, 1764; the first steam-engine in America, it is claimed, came from England, 1753.

Steam fire-engine — Invented by Captain Ericsson, 1830, and improved by him, 1842-'43.

Steam-hammer — Invented by James Nasmyth, 1838.

Steam printing-press (rotary) — Invented by Richard Hoe, 1842; improved by Gordon, 1850, and by Bullock, 1867, with reciprocating bed, by Seth Adams, 1830.

Steel cannon — First made by Krupp, in Germany, 1849.

Steel-pen—See PEN.

Stem-winding watch — Invented by Noel, 1851.

Stereoscope — Invented by Charles Wheatstone, 1838; but the principle was known to Euclid 300 years before Christ, and described by Galen, A. D. 174.

Stereotypes — Invented by Messrs. Didot, French printers, toward the close of the eighteenth century; introduced into America about 1813.

Stereotype printing—Invented by William Ged, of Scotland, 1735.

Stocking-frame—Invented by William Lee, in England, 1589. (See KNITTING MACHINE.)

Street-sweeper—Invented by R. A. Smith, 1855.

Sugar-cane—Originally from China and the East; was produced in Sicily, 1148; in Madeira, 1419; in the West Indies, 1510; in Barbadoes, 1641.

Sugar-refining—First successfully practiced by a Venetian, 1503, and in England, same process, 1569.

Sun-dials—Invented 558 before Christ; mentioned in Isaiah, Bible.

Swords — Made of iron by the Chinese, 1879 years before Christ.

Tack machine — Invented by Thomas Blanchard, 1806.

Tallow candles—See CANDLES.

Tea—Came into general use in China about A. D. 600; first taken to Europe by the Dutch, 1610.

Telegraph (mechanical)—Invented, 1687; first used by the French, 1794, and the English, 1796.

Telegraph (electric)—First established at Geneva, Switzerland, by Lesage, 1782: two by Baron von Schilling, made in 1832; one constructed in Germany by Gauss and Weber, 1838, Professor S. F. B. Morse exhibited his electromagnetic instrument in New York, 1837, and this was brought into practical use in May, 1844, between Washington and Baltimore; Edison invented his duplex transmitter, 1875.

Telegraph (submarine)—Proposed by Salva, 1797, for use between Barcelona and Palma, in the Island of Majorca; experiments in India, 1839; by Professor Morse, in New York harbor, October, 1842, first successful attempt to lay a marine cable across the Atlantic ocean was made in 1858, but the cable soon became useless, the next successful attempt, which was a triumph for Morse and science, was in 1867.

Telegraph (fire-alarm)—Invented by Farmer and Channing, about 1846; improved by Gamewell, 1871· Crane, 1875; Spang, 1875, and by McCulloch.

Telegraph (electric needle) — Invented by Cooke and Wheatstone, in England, 1837.

Telegraphing (musical notes) — Apparatus invented by E. Wilson, 1866; improved by Gray, 1875.

Telegraph (printing) — Invented by R. E. House, 1846. improved by Hughes, 1856.

Telephone (three methods)—Each invented by Bell, Gray and Edison.

Telescopes—Invented by Z. Jansen, 1590; manufactured in 1608, by Lippershey, of Holland; improved by Galileo; Gregory invented and described the reflecting telescope, 1663, and the first was made by Sir Isaac Newton, 1668: Herschel's great telescope was made in 1781: Rosse's, in 1844.

Theater—First built at Athens, Greece, by Philos, 420 years before Christ.

Theater scenery—Painted and introduced by Sienna, 1533.

Theater seats (turn up)—Invented by A. A. Allen, 1854.

Thermometer—Credited to Galileo, 1596; to Drebel, 1620; improved by Reaumur, 1730, and by Fahrenheit, 1749.

Thread — First made at Paisley, Scotland, 1722.

Threshing-machine—Invented by Menzies, of Scotland, 1732, a rotary machine by Leckie, a Scotch farmer, 1758.

Time—Divided into hours at Rome, 308 years before Christ.

Tobacco—Discovered in Cuba, 1492; first taken to Europe by Sir Walter Raleigh, 1555.

Torpedo shells — Invented by Dr. Bushnell, 1777.

Truss bridge—Invented by Price and Phillips, 1841, by Whipple, 1841; improved by Barnes, 1859; by Lowthrop, 1857.

Trusses (for ruptures) — Invented by Robert Brand, 1771.

Type-setting machine—Invented by W. H. Mitchell, 1854; improved by Alden, 1857.

Vaccination—Invented by Dr. E. Jenner, 1780.

Velocipedes — Invented by M. Drais, at Mannheim, 1817.

Violin — Mentioned as early as 1200 in the legendary career of St. Christopher; of great and uncertain antiquity. In its present form invented about A. D. 1477.

Watches — Were invented at Nuremberg, Germany, in 1477, and introduced into England, 1577.

Water-mills—Are said to have been invented at Rome in A. D. 555; Pliny mentions them at an earlier date.

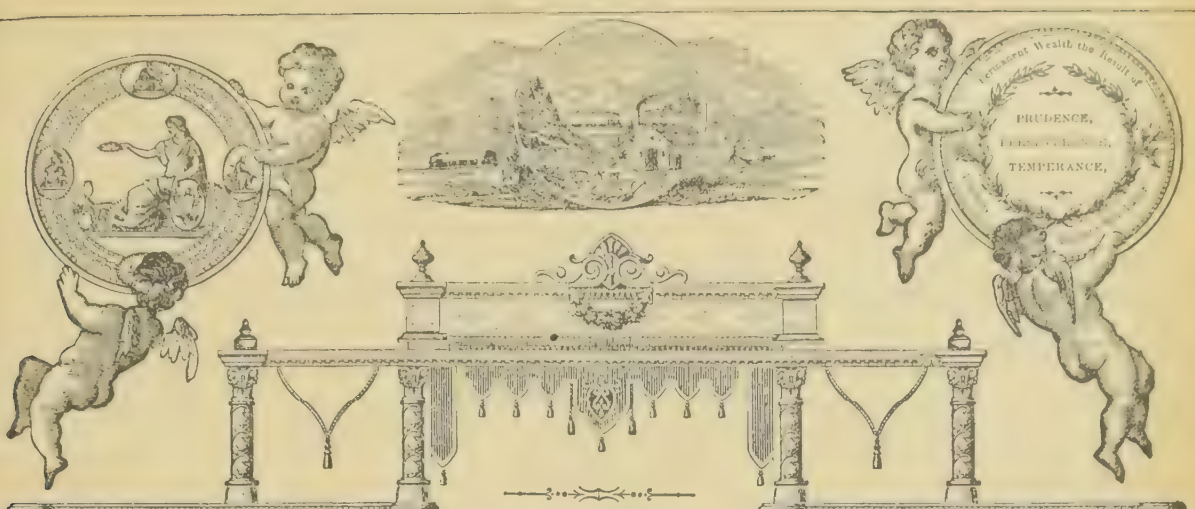
Windows (of glass)—First mentioned in the fourth century; observations at Pompeii indicate the use of glass windows in the first century; in England glass windows were first used in private houses, A. D. 1117.

Wire — Invented at Nuremberg, 1351; wire-drawing at the same place, said to be in 1410.

Wooden pavements—Invented by Nicholson in 1854: improved by De Golyer, 1869; by Ballard, 1870; by Beidler, 1872.

Wood-paper — Invented by Watts and Burgess, 1853.

Woolen cloth — Its manufacture was an ancient art, but not practiced in France until A. D. 1646, nor in England until 1331, but not dyed or dressed until 1667.


Permanent Wealth the Result of
PRUDENCE,
TEMPERANCE,

RICHES.

AS LONG AS wealth will secure comfort and luxury there will always be vigilant effort put forth to obtain it. It is doubtless true that advancing civilization will so abundantly surround man with the means for obtaining comfort, however, as to make the contest for wealth less severe.

There has been a period when, with the laborer, fourteen hours was the necessary time of a day's toil. And even then, this unremitting labor brought only the barest necessities of life. Since those years the hours of a day's work have been greatly lessened. Educational advantages have improved; the cost of traveling has been cheapened; articles of comfort and luxury have been so multiplied and so lessened in price as to come within the reach of all, bringing a condition in which it is not so necessary as formerly to be rich in order to enjoy life.

It is highly probable that there will come an age when a large accumulation of wealth will not be desired, bringing, as it will, simply multiplied cares, without any more privileges than the people of moderate fortune enjoy. To reach that condition, however, it is necessary that we pass through an acquisitive age, a period when the desire to get rich will impel men forward to inaugurate and carry forth enterprises of such character that, while they bring individual, personal gain, they will benefit the public as well.

The desire to acquire wealth, therefore, is legitimate. If no wrong is done to others by the acquisition, it is unquestionably for the world's benefit that there be large individual wealth attained, as the mind, able to acquire, is able to wisely control the expenditure, founding manufactories and various enterprises by which thousands of the poor may be employed.

In the business relations of life there are three classes of mind—the men who depend upon being employed by others; the men partially independent, but still sufficiently dependent as to desire a partnership, and those men who are capable and prefer to exercise their individuality, choosing, in their business relations, to be entirely free from partnership restraints in their methods of procedure.

The power for individual acquisition of wealth by men who prefer to act alone, is illustrated in the lives of the financiers who are considered in this chapter.

The Rothschilds.

Distinguished Bankers and Financiers.

A Great Fortune the Reward of Being Faithful to the Trust.

AT FRANKFORT-ON-THE-MAIN, in Germany, in 1743, Meyer Anselm Rothschild was born. Commencing as a small trader, by economy, integrity and business capacity, he won his way to easy circumstances, and established himself as an exchange broker and banker.

After the battle of Jena, in Germany, October, 1806, Napoleon decreed that the sovereigns of Brunswick and Hesse-Cassel should forfeit their estates, and a French army was sent to put this edict into execution. The landgrave of Hesse-Cassel had £1,000,000 in silver in the vaults of his palace. Aware that he must flee, it was a question of the most serious import how to dispose of this large amount of treasure. Lack of confidence prevented him from confiding it to any of his subjects, any one of whom, he knew, would be severely punished for undertaking its trust, if discovered by the French.

In his extremity he sent to Frankfort for Rothschild as the most trustworthy person whom he knew, and to him he entrusted the great fund, to keep it until called for, the reward being that no interest should be asked. Under these circumstances the trust was accepted, and with the aid of some Jewish bankers at Cassel, the money was so secreted that the French, upon their arrival, found only the landgrave gone, and his treasure vanished

At the time of receiving this money, Meyer Anselm Rothschild had five sons three of whom, grown to manhood, he associated with himself, and by careful management as bankers this money rapidly multiplied itself. On the fall of Napoleon, the landgrave returned and gave notice to the bankers that he would withdraw his loan; but the escape of the French General from the Isle of Elba so alarmed him that he urged the Rothschilds to keep the money at an interest of two per cent. per annum, which they did until his death, in 1823, when they refused to keep it longer.

At the time of the elder Rothschild's death, in 1812, when he was sixty-nine years old, his five sons were respectively at the head of five large banking institutions: Anselm being at Frankfort, where he died in 1855, eighty-two years old; Solomon, located at Vienna, who died also in 1855, eighty-one years old; Nathan Meyer, the ablest financier of the family, established at London, who died in 1836, sixty-two years of age; Charles, the head of the house at Vienna, who died in 1855, in his sixty-seventh year, and, lastly, James, at Paris, who died in 1869, seventy-seven years of age at the time of his death, his fortune, when he died, being estimated at £40,000,000

From a Photo. by RUSSELL & SONS, Brompton Road, S

LORD ROTHSCHILD,

The present Head of the House in England.

A favorite method of investment by the Rothschilds was that of making large loans to governments. During twelve years, at one period of their work, the following were the amounts loaned: To England, £40,000,000 Austria, £10,000,000 Prussia, £8,000,000; France, £16,000,000 Naples, £10,000,000; Russia, £5,000,000; Brazil, £2,400,000 besides £1,000,000 to smaller states, making, in all, £92,400,000

The affairs of the different banking houses of this celebrated family are now conducted by the grandsons of Meyer Anselm, their financial connection through banks and their representatives extending to nearly all the leading cities in civilization.

A fundamental rule of action with the great house of Rothschilds, has been to sell when customers wanted to buy, and buy when people desired to sell. That there have been times when they wielded their immense monied influence to depreciate the value of that which they wanted to buy, is highly probable; and that they have used their power to elevate the price of that which they possessed, in order to sell at a high price to those wishing to purchase, is likewise probable; but that they have been scrupulously exact in the fulfillment of every promise, is equally a fact. In short, the commercial word of every Rothschild has ever been as religiously kept as was that of the elder Rothschild to the landgrave.

George Peabody.

Distinguished Banker and Financier.

OBSERVATION proves that the majority of those men who become celebrated for the acquisition of wealth in their later years, beside inheriting a good physical constitution and a well balanced mind, have been trained to useful labor in youth.

A sound brain in a sound body, rightly directed in childhood, is one of the grandest endowments that the parent can give the offspring. The success that attended the subject of our sketch, George Peabody, was the result of this fortunate inheritance. His parents were poor. That was to his advantage, as the son was compelled to rely upon his own energies, which were thus developed by use. He had a strong physical constitution, and that enabled him to endure. He had a kind and wise mother, whose good counsels directed him into the right path.

George Peabody was born in Danvers, Mass., February 18, 1795. Early compelled to assist his father's family, he was taken from school when eleven years of age, and given employment in the country store of Sylvester Proctor, in Danvers. He proved himself a faithful clerk here for the next five years.

His father dying when George was in his teens, he took upon himself, as best he could, the task of providing for his mother, his brothers and his sisters; a proof that true worth was in the boy, which subsequent years fully demonstrated.

Not many incidents of note occurred with him in his boyhood. At fifteen he left Mr. Proctor's to go to Vermont, where he remained a year with his grandparents, at Thetford. A year later he went into the dry-goods store of his brother, David Peabody, at Newburyport, Mass., where a large fire, which destroyed his brother's store, compelled him to seek a place elsewhere. He next entered the employment of his uncle in Georgetown, D. C., which place he soon left, to find a better position with Mr. Elisha Riggs, in that city, who made him his partner. Young Peabody was then but nineteen. The business was the wholesaling of dry-goods, largely imported from Europe.

To secure trade Peabody made various journeys on horseback into the unsettled regions of the border States, with such success as to make it necessary to establish the store of his firm at a more central place; Baltimore being selected as the point. In that city the young merchant immediately took front rank, being noted as a business man for his quick and cautious judgment; his decision, firmness, industry, punctuality, justice and honor in every transaction; the whole accompanied by a genial courtesy that won him friends on every side.

The business of the house so rapidly extended as to make it soon necessary to establish branches in New York and Philadelphia, the whole being under the immediate careful supervision of Mr. Peabody. In 1829 Mr. Riggs withdrew from the active business of the institution, still leaving his name, however — the firm continuing as Peabody, Riggs & Co. Opening a banking department in connection with the house, which had proven very profitable, especially as the financial agents of the State of Maryland, and having been in England frequently, where he had made a large acquaintance, Mr. Peabody resolved to establish a branch store in London, and in 1837, when forty-two years old, he went there to permanently reside.

In the succeeding year he did great service to his native country by securing monied assistance at a time when general financial wreck had overspread the commercial interests of the United States. Through his own wealth, and trust in the future of America, he was able and willing to buy largely of American securities, while his integrity and high standing among the capitalists of England inspired confidence in others. Thus credit was saved to the State of Maryland, which he represented as its agent, as well as to vast monied interests in the United States. In his transactions at that time Mr. Peabody acquired great reputation for financial strength, courage and ability. In the meantime his mercantile interests steadily grew in America. He bought very heavily of British goods, and shipped them to this country, receiving by his vessels, in return, all kinds of American produce, which found ready sale in England.

Gradually his customers, when they consigned to his firm, not only drew upon him, but they as often deposited large amounts of money with him, to be held until required. The result was that he soon found himself doing a large banking business.

In 1843 his business firm name was changed to "George Peabody & Company, of Warnford Court, City," and banking thenceforth became his leading business, the purchase and sale of American securities being his specialty. Through his geniality and kindly courtesy, his office, which was liberally supplied with newspapers from the United States, became the resort of Americans in London.

Though careful in expenditure, he was liberal. For many years it was his custom to give a grand dinner at some public place on the Fourth of July, in commemoration of the establishment of American independence. At this dinner he invited distinguished Americans who might be in London at the time, as he did also prominent men in Great Britain. At the opening of the International exposition in 1851, no provision having been made by congress for the display of American products, George Peabody furnished the commissioners with the sum of £3,000, with which the articles of American skill, including printing-presses, revolvers, reapers, machines, works of sculpture, and many valuable inventions were so finely displayed as to win the applause of the civilized world.

Generous thus in the bestowal of thousands or millions, he was rigidly economical to the penny, the result of the habits that he had formed in his youth. Never married, he lived cheaply in a suite of apartments and entertained his friends at the club house. In dress he was scrupulously neat, but unostentatious. Anything calculated to attract attention he carefully avoided. A black band was the only thing he would wear for a watch-guard.

In the later years of his residence in London, he made several visits to his native country, renewing his friendships of early years. Having acquired immense wealth, his life was particularly notable, near its close, for the many and wise gifts which he made for exploration, discovery, for the education of the masses, and for the comfort and welfare of the poor.

The following were some of his principal donations during his life, together with bequests made by his will:

The Peabody Bequests.

To the Southern Educational Fund	£700,000
To Homes for the Poor in London	£500,000
To the Peabody Institute, at Baltimore	£200,000
To Peabody Institute, Peabody, Mass.	£50,000
To Institute of Archæology, Harvard College	£30,000
To Department of Physical Science, Yale College	£30,000
To Peabody Museum, Salem, Mass.	£30,000
To Memorial Church in Georgetown, D. C.	£20,000
To Washington College, Va.	£12,000
To Phillips' Academy, Andover, Mass.	£6,000
To Kenyon College, at Gambier, O.	£5,000
To Public Library, Newburyport, Mass.	£4,000
To Maryland Historical Society	£4,000
To Grinnell Expedition, under Dr. Kane	£2,000
To Public Library, Thetford, Vt.	£2,000

He contributed about £40,000 to various other objects, and left £1,000,000 mostly to his relatives. He died in London, Nov. 4, 1869, when seventy-two years of age. The news of his death was received with profound grief on both sides of the Atlantic. So great had been his benefactions to England as to cause the Queen to present him with her portrait, painted at an expense of £6,000 She had also offered him a baronetcy, which he declined. His body lay in state for some time at Westminster Abbey, and when brought to his country in a royal man-of-war ship, every homage was paid that could be extended to a citizen that had so greatly honored and benefited his country.

At Peabody, Mass., amid thousands of mourners, they laid him gently to rest by the side of that mother whose tender counsels, in his boyhood, had laid the foundation for his fame and fortune. The monument that stands above his tomb is an ever-living witness of what the boy in humble circumstances may achieve in life who is industrious, temperate, economical, enterprising, faithful and honest.

PETER COOPER

First Manufacturer of Locomotives in America, and Founder of the Cooper Institute.

Cooper Institute, New York.

PETER COOPER millionaire and philanthropist, was born in New York, February 12, 1791. With a limited education, at seventeen, he was apprenticed to a coach-maker, and worked with such fidelity and skill, that his employer offered to set him up in business for himself; but this was declined, although he followed his trade for some time afterwards. Then he tried manufacturing patent machines for shearing cloth, during the war of 1812; then the manufacture of furniture; then the grocery business, finally settling down to the production of glue and isinglass, which he continued for fifty years. He also erected iron-mills, and followed the manufacture of railroad iron on a large scale, and was the first to roll wrought-iron beams for fire-proof buildings. The iron business is still carried on extensively by his family. He built the first locomotive engine ever constructed on this continent, after his own designs; invested largely in the extension of the electric telegraph, and in municipal improvements and the cause of education, he exhibited an enterprising spirit. To his liberality New York owes the Cooper Institute for the advancement of science and art, the edifice costing Mr. Cooper more than £130,000 besides an endowment of £30,000 in cash, the whole being devoted to the instruction and elevation of the working classes of that city, free of charge. It has a series of schools, well attended, in which learning is practically applied to the industries of life, and employs upward of thirty instructors. Besides these schools there is a free reading-room and library, with galleries of art, collections of models of inventions, etc.

In 1876 Mr. Cooper was a candidate for the presidency before the people on the National Greenback ticket; and during the presidential canvass of 1880, he was present, an honored guest, at the Greenback gathering held in Cooper Institute. In 1881 he was living in New York, in the enjoyment of good health and a serene old age, his active participation in public matters descending to his family, among whom his son-in-law, Abram S. Hewitt, has been an influential member of Congress, and his son Edward an honored Mayor of New York. He died April 4, 1883.

JAY GOULD.

Distinguished Speculator in Stocks, Railroad Owner and Financier.

THE little village of Roxbury, in Delaware county, N. Y., is fifty-five miles west from Rondout, on the Hudson river. Into this vicinity came, from Connecticut, at an early day, Abraham Gould, one of the old Puritan stock. To him was born John. B. Gould, the first white male inhabitant whose birth occurred in the town.

John B. grew to manhood in Roxbury; lived and died there, being in the meantime twice married. By his first wife he had five children — four daughters and a son. By the last he had one son.

The son by the first wife was born in May, 1836, and is the subject of our sketch—Jay Gould.

Whatever faults Jay's father, John B. Gould, may have had, he possessed some sterling virtues, among which was a firm resolve to do as he had promised. Many farmers, in that portion of Delaware county, in an early day, had leased their land, having contracted to pay a stipulated rent for a long series of years. This rent became a burden, and many of the farmers resolved upon repudiating the contract. Such were known as the "Down-renters," that is, down with the rent. The repudiators were largely in the majority. The few who resolved to fulfill their contracts were termed the "Up-renters," pay up your rent. With the latter was Jay's father.

JAY GOULD.

Various were the attempts made by intimidation and otherwise, to compel John B., who was an influential citizen, to join with the majority; but he stood firm in his determination. The result was that such a feeling was aroused against him among the neighbors as to extend even to the children, making their attendance at school disagreeable from the insults they received.

Resolved to submit to this persecution no longer, Jay's father, in company with a neighbor, erected a school-house upon his own land, in which they placed a gentleman of superior education to teach a school for the benefit of their own children. To those who came from the outside a tuition fee was charged; but notwithstanding this hindrance, so popular became the institution as to practically break up the district school.

Here young Jay pursued his earlier studies. Subsequently, he went to a select school taught at Hobart, six miles away, and afterwards to an academy in Roxbury village, two miles from his father's farm. This, together with a year at school in Albany, where he gave attention mainly to the study of surveying, completed his studies.

As a boy, he was averse to participating in the general sports of the school. Small for his age, retiring and diffident, he withdrew by himself, and was rather disliked by his schoolmates because of his unwillingness to join with them in their plays. This ill-will was engendered, also, by the fact that he excelled his associates of the same age in nearly all the studies they pursued together. He cared but little for declamation, though he occasionally took part in the debating societies, his arguments being generally very brief and always directly to the point. He wrote an excellent essay; was a good grammarian, and was generally proficient in all his studies; his marked superiority, however, being in the range of mathematics, in which study he immediately passed his associates, and advanced, apparently without effort, beyond their reach.

Jay's mother had died when he was quite young, leaving his guardianship largely to the care of his sisters, who were older. It was soon evident to his father that his aptitude for business was such that he could be trusted, and thus Jay was placed in charge of a stove and tin shop, when quite a boy, which store his father afterwards sold to advantage.

Jay Gould's first experience with the great world at large was at the world's fair in New York, in 1853. His uncle, Mr. Moore, had devised a rat-trap, which Jay had interested himself in, and had been instrumental in securing a patent for. To bring this trap before the world, Jay became its exhibitor at the world's fair. While he was there, one day President Pierce passed through, and talked with many of the attendants at the exhibition. It was on this occasion that he shook hands with young Gould, who looked thoughtfully after him as he passed on and was lost in the crowd. The honor bestowed on him by the presidential party evidently deeply impressed him, and after a little time of silence he turned to a boy acquaintance and said, "I shall be President of the United States myself some day."

Jay was then only sixteen, but in that brain there lurked, even in those young years, a towering ambition to do and to become somebody great and grand in after time. Whoever could have looked into that heart would have seen the fire, even then, that was to make the boy famous in the years to come.

Jay was eighteen when he entered the store of Esquire Berhans, at Roxbury, as a clerk. His employer kept a general store and did what surveying was required among the farmers of that vicinity. Gould immediately employed himself in getting a practical knowledge of surveying.

To make himself more rapidly proficient, he commenced and surveyed the farms of that vicinity and brought out a map of Delaware county. He paid his running expenses by placing the noon mark on the farmers' doors, wherever he went, charging for time and trouble in this a dollar each. In this work he gathered a large amount of information relating to the history of the county, which was afterwards published as a History of Delaware County, by Jay Gould: an octavo volume of some 400 pages.

Birthplace of Jay Gould.

He about this time surveyed and had mapped Albany and Ulster counties in New York and two counties in Ohio, which business he sold however to enter upon the work of the civil engineer, in which he surveyed the route of a railway through his county, and laid out and established the grade for the horse-railway that now extends from Albany to West Troy.

Though carrying a very old head on young shoulders, Gould sometimes lost his reckoning, and was put to his wits' end to get out of difficulty. It was while he was surveying the Troy and Albany horse-railway that he became completely nonplused, and to make the quandary still more embarrassing, a large force of workmen stood waiting on him for orders.

He had entirely lost his bearings, and how to escape from his difficulty without acknowledging defeat before the workmen, was the thought that most troubled him. It was at this juncture that he earnestly prayed for rain, that there might be an excuse for suspending the work of the day. Luckily, the sky being overcast, it soon did rain, and the men were dismissed with orders to be on duty early on the morrow. Forthwith Jay repaired to a practical engineer, explained his trouble, got light on the subject, and on the next day as the men assembled, orders were promptly given them by Gould, and then work rapidly and efficiently proceeded to completion.

Of course a young man of Gould's ambition could never be satisfied without having something to do with a newspaper. It was about this time that he was called to edit a neighboring paper during the absence of its editor. In that position, among other things there appeared in the publication a glowing encomium upon the life and labors of Colonel Zadok Pratt, the noted tanner, then of Prattville, in which the article strongly recommended Pratt for the Vice-Presidency at a forthcoming presidential election. This greatly pleased the Colonel, and the authorship being attributed to "Jay Gould of Roxbury," Pratt inquired him out, learning in the meantime that Gould was a competent and skillful surveyor.

Meeting Gould one day by the roadside, engaged in running a survey, Pratt proposed that he then get into his carriage and go with him to the village for a further talk about surveying property which Pratt thought of buying. To this Gould promptly said no, but added that he would run his line to a certain point by such a time, when he would meet Pratt, and they could then confer on the subject. This decision of the young man and his evident understanding of his business, favorably impressed Pratt, who at once acceded to the arrangement made by Gould.

The result of their conference was a partnership, in which Pratt and Gould went into Pennsylvania and there purchased several thousand acres of hemlock land, Pratt furnishing the capital, upon which they erected an extensive tannery, calling the place Gouldsborough, in honor of Gould. Although then but twenty years of age, Gould made out all the papers and did all the work requiring legal knowledge. This partnership lasted three years, in which time extensive tanning works had been, under Gould's superintendency, erected and put into operation; a large force of workmen were engaged in bringing in bark from the surrounding country; the plans were perfected for obtaining hides, and the facilities had been secured for selling the leather in New York.

It was at this time that Pratt became alarmed at the pecuniary condition of affairs in his tannery in Pennsylvania. Permission had been given Gould to sign the firm name to notes for what money might be required, and the impression prevailed with Pratt that Gould was giving out more notes, and thus obtaining more money, than was necessary. Thoroughly determined to close the partnership, he repaired to Gouldsborough to confer with Gould, the proposition being made that he should either sell or buy the interest of Pratt.

Gould was apparently surprised that Pratt should be dissatisfied. He detailed the work that was being done, but Pratt was inexorable. One or the other must buy or sell. Gould replied that inasmuch as he had but little capital in the concern, it was evident that Mr. Pratt would be compelled to buy the institution. He must therefore put such a price upon the factory as he was willing to buy at; that price to be the same whether Pratt bought or sold. It was a natural conclusion that Pratt would have to buy, and he therefore placed a low figure as the sum which he would pay. Gould's knowledge of human nature had foreseen what Pratt would do, and he waited the issue.

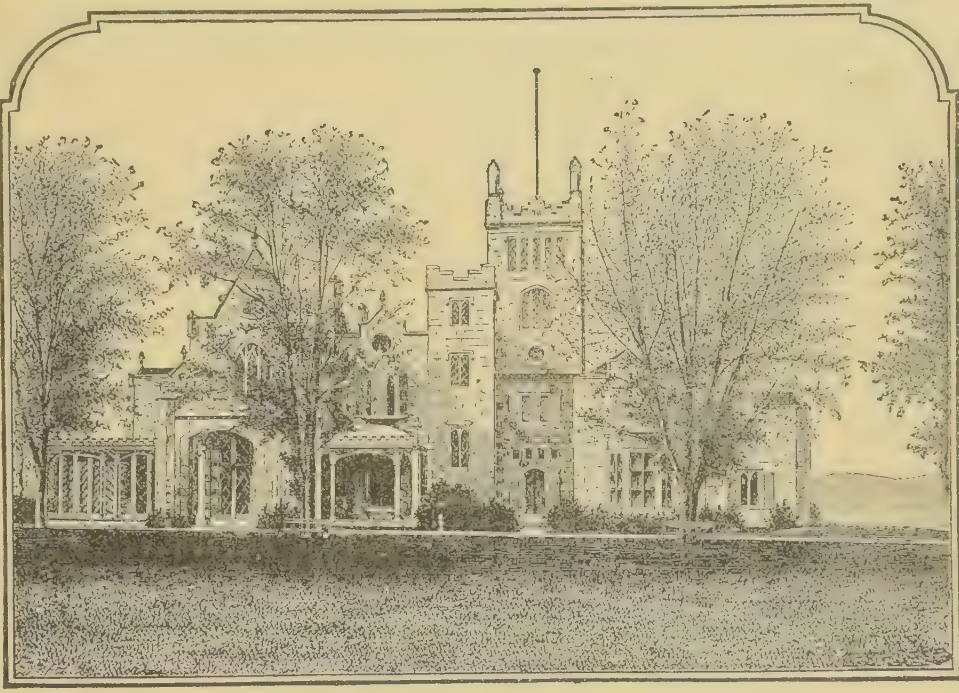
No sooner had Pratt made his proposition than Gould demanded that it be put in writing. As the proposition was new, he also required that a certain number of days be allowed him to consider whether he would sell his interest at the price named, or buy. To this Pratt assented.

These preliminaries being arranged, Gould went to New York, laid the affair before George Loop, an extensive and wealthy dealer in leather, who promptly came forward, furnished the money, and Pratt's interest was purchased at his own offer, Gould remaining in charge.

Gould's enemies aver that the notes of Pratt & Gould, given by him, kept coming back long after the dissolution of partnership, to the extent of tens of thousands of dollars, and had much to do with Pratt's final financial overthrow; while his friends claim that a just cause could be assigned for the issuance of every note which he gave.

The partnership between Gould and Loop did not last long. Misunderstandings and difficulties arose, which resulted in the sheriff and a posse of men in Gould's temporary absence entering and taking possession of the tannery in behalf of Loop. When Gould returned, he rallied his workmen, had a hand to hand contest with the officers in charge, in which shots were fired, and finally regained possession of the works.

While yet the matter was in the courts, Loop committed suicide and thus ended his connection with the case. The enemies of Gould assert that pecuniary loss and trouble, sustained through him, caused the suicide. His friends, on the contrary, insist that insanity was in the Loop family, and that he would have committed suicide upon any other excitement just as quickly. That Gould did the fair thing, they claim, is shown in the fact that his transactions were at every point sustained by the courts.



Jay Gould's Summer Residence.

At Irvington, near Tarrytown, N. Y., on the Hudson River.

In the midst of his litigation with Loop, Gould opened a leather store in New York on Spruce street, and in 1862 he married Helen Miller, daughter of Daniel S. Miller, a well-known capitalist of New York. Through acquaintance thus made, he disposed of his leather business and purchased a controlling interest in the Troy and Rutland railroad, of which corporation he was chosen president, with headquarters at Troy.

Soon after he disposed of his connection in that road and procured an interest in the Erie. It was about this time that Jim Fisk was given authority by Vanderbilt, and Jay Gould was empowered by Daniel Drew, to purchase and exercise power with a large amount of the stock of the Erie. In the turns that were made Fisk was given a prominent position in the management and Gould became president of the company.

That Gould and Fisk made a great deal of money in their connection with this corporation, was evident in the Grand Opera House which they erected, and in which they had the most sumptuously fitted-up office in New York; the palace cars which they had constructed and bore their names on the Erie railway, and the magnificent steamers which floated in the Sound, built and fitted-out at their expense.

Fisk was a showy man and delighted in making a display of his wealth. Gould was out of sight, was using Fisk, was studying men, and was evidently all the time swimming in deeper water. The stockholders of the Erie, convinced that Gould and Fisk were using the funds of the road for their own personal benefit, instituted proceedings against them, but for some reason they could never be arrested. Although the officers dogged their track and watched the office, Gould and Fisk came and went unmolested, and when at length the matter for which they were prosecuted had a hearing in the courts, the judges, in the main, sustained them. The friends of Gould point to his support from the law as a proof of his honesty, while his enemies claim that his plans were always laid deep enough to control all the courts.

Gould retired from the Erie, with the understanding that in the settlement of differences he was to pay the Erie company $10,000,000 which was due to it from himself. This sum, his friends claim, was merely nominal, no such sum ever being expected by the company from him, but that this report was simply for effect.

At the close of the litigation Gould retained yet a large interest in the Erie, which rose to a point such as to increase his fortune several hundred thousand dollars.

Gould was for a time in the brokerage business in New York, located on Broad St., the firm name being Smith, Gould & Martin; and during these years came and went Black Friday, and many other exciting events, through which his friends claim it wil be found Gould has always discharged every legal obligation as faithfully as his father was disposed to in the days of the anti-rent troubles up in Delaware county.

Of late years Gould has withdrawn himself from the sight of the multitude. He has dealt principally in railroad stocks, and with such remarkable foresight as to give him an estimated wealth to-day of $60,000,000. This great wealth has become a power by which, with his knowledge of men and things, it is easy for him to make greater wealth. Thus he can easily buy a controlling interest in a Western railway, the stock of which is low; and by opening connections with his other railways, he can thus increase the receipts of his new acquisition and raise the value of its stock, which, if he desires to sell, he can thus dispose of at a great advance over the cost.

He controls a great network of Western railways and telegraph lines, the value of the stock in which he can raise or lower at will, and thus within himself he has the power of rapidly adding to his possessions.

Of late a large source of his wealth has been the construction of new railways in the territories, where the rates of fare have been sufficiently high and the rush of travel sufficiently great to yield an income that paid for the roads the first year. With the exception of these investments, his rule is to buy depreciated stock of various roads and sell them on the rise. In other words, he has acted on the advice of a keen stock operator who, when asked how to make money in stocks, replied, "Buy 'em when they're low, and sell 'em when they're high."

Gould is held in profound dread and admiration on Wall street. If stocks are going down, the belief is that Gould is selling somewhere; when the stocks are down, it is known that his brokers will buy for him in large amounts. When the stocks are going up, it is believed that he is yet buying, and somewhere near the top it is known that he will sell out at an advance what he bought at a low price. What he is doing is always a profound mystery, as must necessarily be the case in order that he may succeed.

In a plain, handsome residence, near Forty-seventh street, on Fifth avenue, New York, Gould and his family pass the winters, and in an elegant residence at Tarrytown, on the Hudson, surrounded by ninety acres of land, they spend the summers. A special car, fitted-up luxuriously, is kept in Tarrytown to carry Gould and a few others each morning to New York, and waits in readiness to take them home at night. Once every year he makes a two months' tour over his Western railways, being latterly accompanied by his eldest son, George J. Gould, a promising young man, who at this writing, in 1891, is just twenty-nine years of age. This son is one of six children, of whom there are four boys and two girls.

"Can Gould be President of the United States?" was queried of a friend of his.

"Possibly it has ceased to be his ambition, but if he should desire it," said he, "I have no doubt he could. He is the most remarkable organizer in the world. He will lay a plan from the beginning so perfectly as to accomplish his aim, without, apparently, having anything to do with it. He could do this as a boy—he does it as a man. At present," he continued, "it is probably his ambition to be the richest man on earth, which wealth you will ultimately see will be used for the benefit of mankind; for I know, to-day, many of his private charities which he does not want spoken of. In time he will have the largest number of men in his employ of any living man, if he has not to-day. Ten years hence, you see, with his constantly aggregating wealth, his power will be simply immense."

"In fact," continued the friend, "in courage to venture, power to organize, foresight to comprehend results, wisdom to control and coolness to act, he is the greatest man on earth, to-day, of his age, being in the year 1891 but fifty-five years old."

A remarkable feature of Gould's life is the fact that a brain can exercise such great power, when sustained by a body so small as to be but a little over five feet high and weighing 119 pounds.

Among the causes of his success are these:

He inherited an organization in which were love of approbation and love of power, combined with dignity of character. Along with these were superior knowledge of human nature, great mathematical talent, combined with force to propel, and inventive genius, which enables him to plan the means.

His infancy and youth were carefully guarded by kind, Christian sisters, who made his welfare their constant study.

He received a strictly practical education. Everything he learned he made use of, and no time was wasted in learning that which was unnecessary or had to be thrown away as useless.

Born in humble circumstances, it was necessary that he labor in order to support himself, hence the formation of industrious habits.

He is a man of the strictest order. He has a time for everything, and every appointment and duty must come in the appointed time. By this methodical system he knows the result of his business in all parts of the United States at the close of every day, his men in all parts of the Union telegraphing to him at a certain hour the proceeding and results of the day.

He is a man of the most temperate and careful habits. He thus keeps his body in most perfect condition for the support of a brain, the workings of which have wrought greater financial results than that of any living man at so early a period in life.

RULES THAT LEAD TO SUCCESS.

The Experience and Testimony of Successful Men.

A B C of Success.

ATTEND carefully to details of your business.
Be prompt in all things.
Consider well,—then decide.
Dare to do right. Fear to do wrong.
Endure trials patiently.
Fight life's battle bravely, manfully.
Go not in the society of the vicious.
Hold integrity sacred.
Injure not another's reputation or business.
Join hands only with the virtuous.
Keep your mind from evil thoughts.
Lie not for any consideration.
Make few acquaintances.
Never try to appear what you are not.
Oppose not in spite or malice.
Pay your debts promptly.
Question not the veracity of a friend.
Respect the counsel of your parents.
Sacrifice money rather than principle.
Touch not, taste not, handle not intoxicating drinks.
Use your leisure time for improvement.
Venture not upon the threshold of wrong.
Watch carefully over your passions.
'Xtend to every one a kindly salutation.
Yield not to discouragements.
Zealously labor for the right.
& success is certain.

You Will Not be Sorry,

FOR being courteous to all.
For doing good to all men.
For speaking evil of no one.
For hearing before judging.
For holding an angry tongue.
For thinking before speaking.
For being kind to the distressed.
For asking pardon for all wrongs.
For being patient toward everybody.
For stopping the ears of a tale-bearer.
For disbelieving most of the ill-reports.

Seventeen Good Habits.

SEVENTEEN good habits, to keep in mind, are recounted in the following lines:

1. Constant occupation.
2. Temperance at meals.
3. Giving as well as receiving.
4. Talking on edifying subjects.
5. Doing at once what is required.
6. Regular pursuit in some science.
7. Paying for everything in advance.
8. Acting always in the right spirit.
9. Looking always on the bright side.
10. Aiming at harmony in conversation.
11. Associate with none but good society.
12. Have a time and place for everything.
13. Fidelity to all appointments and duties.
14. Realizing the presence of God at all times.
15. Spending leisure hours reading good books.
16. Abstinence from tobacco and intoxicants.
17. Daily attention to all the conditions of health.

Requisites of Success.

IN answer to an inquiry as to what constituted the essential elements to man's success, Colonel Thomas A. Scott is said to have replied:

He must possess the necessary equanimity of temperament to conceive an idea, the capacity to form it into some tangible shape, the ingenuity to put it into practical operation, the ability to favorably impress others with its merits, and the power of will that is necessary to force it to success.

McDonough's Rules for Making Money.

THE distinguished millionaire of New Orleans, John McDonough, upon being interrogated as to the secret of money making, replied:

To succeed in life you must obtain the favor and influence of the opulent and the authorities of the country in which you live. This is the *first* rule.

You must exercise your influence and power over those who in point of wealth are inferior to you; and by availing yourself of their talents, knowledge and information, turn them to your own advantage. This is the *second* rule.

There is a *third* and last rule, and that is prayer. You must pray to the Almighty with fervor and zeal, and you will be sustained in all your doings, for I never prayed sincerely to God in all my life without having my prayers answered satisfactorily. Follow my advice and you will become a rich man.

Maxims by Benjamin Franklin.

MANY foxes grow gray, but few grow good.

Presumption first blinds a man, then sets him running.

Drink does not drown care, but waters it and makes it grow faster.

Having been poor is no shame, but being ashamed of it is.

The wise man draws more advantage from his enemies than the fool from his friends.

Keep conscience clear, then never fear.

Strive to be the greatest man in your country, and you may be disappointed; strive to be the best, and you may succeed.

Honest Tom! You may trust him with a house full of untold millstones.

There is no man so bad, but he secretly respects the good.

Courage would fight, but discretion won't let him.

We are not so sensible of the greatest health as of the least sickness.

A good example is the best sermon.

A quiet conscience rests in thunder, but rest and guilt live far asunder.

He that won't be counseled can't be helped.

Write injuries in dust, benefits in marble.

What is serving God! 'Tis doing good to man.

Time enough always proves little enough.

He that cannot bear with other people's passions, cannot govern his own.

He that by the plow would thrive, himself must either hold or drive.

He that keeps his shop, his shop will keep him.

Jefferson's Ten Rules.

TAKE things always by the smooth handle.

Never spend your money before you have it.

We seldom repent of having eaten too little.

Pride costs more than hunger, thirst, and cold.

Nothing is troublesome that we do willingly.

Put not off till to-morrow what you can do to-day.

Never trouble another for what you can do yourself.

Never buy what you don't want because it is cheap.

How much pain the evils have cost us that never have happened.

When angry, count ten before you speak; if very angry, count a hundred.

Herbert Spencer, English Philosopher and Scientist.

Author of the Saying, "Survival of the Fittest."

CONTEMPORANEOUS with Charles R. Darwin is Herbert Spencer, in the advocacy of the ideas relating to the higher forms of life coming up from the lower orders. Mr. Spencer was born at Derby, England, April 27, 1820. He early exhibited a fondness for collecting, classifying, and studying winged insects, a favorite pastime with him being to catch caterpillars for the purpose of watching their transformations to other forms. Possessing a mind disposed to be philosophical, the study of these changes led him to inquire as to the means by which organized existence is evolved.

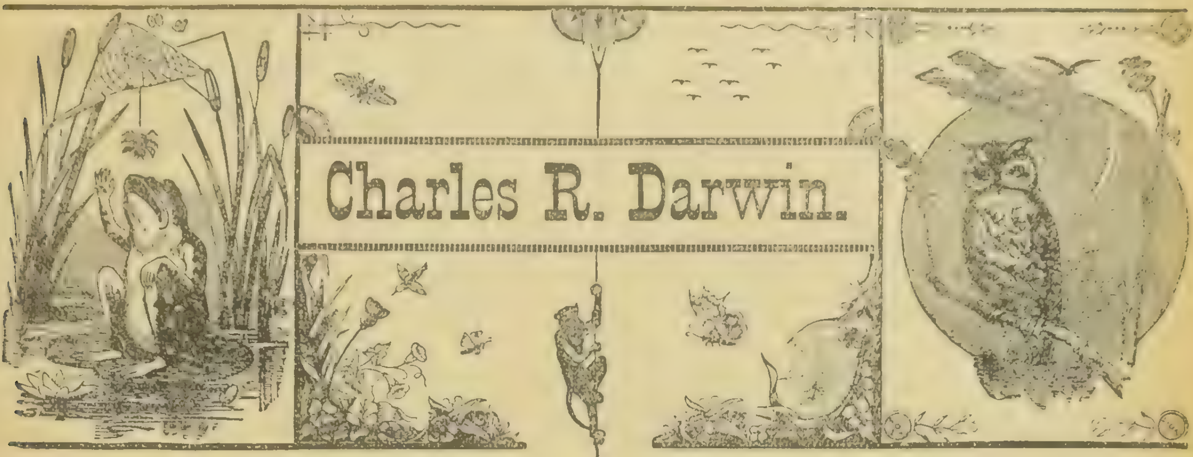
HERBERT SPENCER.

The Rev. Thomas Spencer, rector of the parish at Hinton, was his tutor for three years, and his father, author of a work on "Inventional Geometry," gave him further instruction, the especial delight of young Herbert being mathematics.

He was appointed civil engineer on the Birmingham and London railway at the age of seventeen, from which, three years afterwards, he retired and returned home, in order to pursue mathematics and philosophical studies. Herbariums, a botanical press, and various schemes of invention, occupied his mind for some years. When twenty-three years of age, he next went to London to get literary occupation, failing to obtain which he resumed engineering, but gratified his literary taste by communications to the *Civil Engineers' and Architects' Journal*, the *Philosophical Magazine*, and other publications of similar character.

In 1842 he commenced a series of articles for the *Nonconformist*, on the "Proper Sphere of Government," which were afterwards issued in pamphlet form. He was a contributor of elaborate essays to various scientific publications, from 1848 to 1854, during which time he outlined his idea of evolution. In 1854 he fully determined that the natural order of creation was through the evolving of one species from another below, and so on down through to the first forms of life; but it was not until 1860 that he published an exposition of the subject, in which he quite fully elaborated the idea. In the meantime he has been a prolific writer upon the subject of sociology—one of his leading publications on this subject being "Social Statics; or, the Conditions Essential to Human Happiness Specified, and the First of Them Developed," which first appeared in London in 1850. Since that time he has successively published works on "Psychology;" "Railway Morals and Policy;" "Essays, Scientific, Political, and Speculative;" "Illustrations of Universal Progress;" "Essays, Moral, Political, and Æsthetic;" "Education, Intellectual, Moral, and Physical;" "First Principles of a System of Philosophy;" "Classification of the Sciences;" "Reasons for Dissenting from the Philosophy of M. Comte;" "Principles of Biology;" "Spontaneous Generation, and the Hypothesis of Physiological Units;" "Recent Discussions in Science, Philosophy, and Morals," collected from English reviews, with six additional articles.

Mr. Spencer is a retired gentleman, who has for many years lived at a quiet boarding-house in London. Although a philosopher of wide reputation, the multiplied volumes of this scientist have had so limited a sale as to give the author but a precarious subsistence. He will probably be much more fully appreciated hereafter. In 1882-3, Mr. Spencer visited the United States and was cordially welcomed by scientific circles.



Charles R. Darwin.

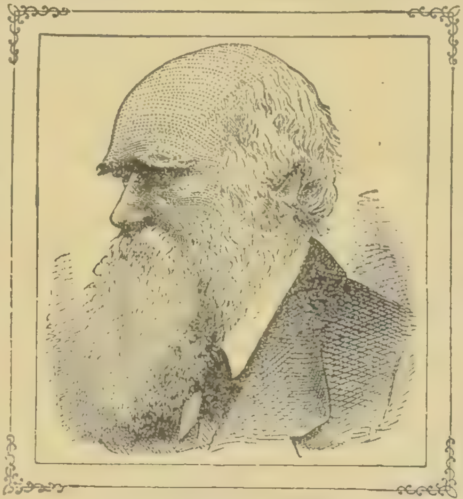
Naturalist and Expounder of the Darwinian Theory.

THE NATURALIST, Charles R. Darwin, was born in Shrewsbury, in England, February 9, 1809, and graduated at Christ's College, Cambridge, in 1831.

On the ship Beagle, which sailed from England, in 1831, he was a passenger on a voyage of exploration around the world, which lasted five years. Out of this journey he gathered material for a volume, published in 1842, on "The Structure and Distribution of Coral Reefs;" in 1844, "Geological Observations on Volcanic Islands," and, in 1846, "Geological Observations in South America."

In 1851 and 1853 two volumes appeared, entitled "Monograph of the Family Cirripedia," followed by two other volumes on the fossil species of the same class.

His most celebrated work, "The Origin of Species by Means of Natural Selection," appeared in 1859. The ideas advanced by Darwin in this last-mentioned volume, called forth a great amount of controversy, the interest in the subject causing the book to be translated into several languages. A German publisher, at Berlin, discovered that 312 different authors had written books and pamphlets relating to Darwinism, and no work of the age has excited so much review and comment.



CHARLES ROBERT DARWIN.

In 1862 appeared his work on the "Fertilization of Orchids;" in 1868, "Variation of Animals and Plants under Domestication," and, in 1871, a treatise on "The Descent of Man, and Selection in Relation to Sex," being a further consideration of the "Origin of the Species," the object of which is to prove that man has descended from a lower order of animal life.

Among his later works is a volume entitled, "Movements and Habits of Climbing Plants," and "The Expression of the Emotions in Men and Animals."

He was the recipient of various orders of merit, and elected to membership in several of the learned societies of Europe, contributing very largely to a knowledge of the lower animals, while his ideas in regard to the origin of man are accepted by some and denounced by others. He died in London, Eng., April 20, 1882.

The Theories of Darwin

are essentially those of the evolutionists, which are that all the higher forms of creation have gradually progressed up from the lower; that the fittest, strongest and best of every order, class and race survive, while the weaker perish. Thus, with the lower animals, the strongest will capture their prey, will live and multiply their kind; the weaker will die and leave no issue. The best, therefore, propagate their species, and improvement is the order. With races and nations of people at war, the strongest and superior conquer, perpetuate themselves, and civilization advances.

The theories of evolution, it is said, were advanced by the early Greek philosophers, who claimed that animal life originated from earth, with the assistance of water, light and heat. Aristotle, it is said, in the olden time, claimed that man did not originate in a perfect state, but was evolved from the lower orders. Linnæus and Buffon, in later times, espoused the idea of progressive organic development. Dr. Erasmus Darwin, the grandfather of Charles R. Darwin, in a published work, in 1794, maintained the development theory. Lamarck, in 1815, took the position that all organic forms, from the lowest to the highest, have progressively developed from microscopic particles. Goethe, in Germany, assumed the same position, as did Geoffroy Saint-Hilaire, of France, in a scientific work, published in 1828. Professor Grant, of Edinburgh, through the *Philosophical Journal*, in 1826, held that species are descended from other species.

Herbert Spencer, in 1852, advanced arguments to prove that species have been greatly modified by changes of circumstances.

The first, however, clearly to define and popularize the idea of of progression, was Charles R. Darwin, in his work on the "Origin of the Species," in 1858.

The Theories of Progression.

Plate I.—**FIRST EPOCH.**—*Primordial Age.*
Earth hardened, matured; vegetation sprang forth, and lowest forms of moving life, headless animals, shell-fish, etc., were evolved.

Plate II.—**SECOND EPOCH.**—*Primary Period.*
The period in which vegetation had attained to rank growth; water separated from land and fishes developed.

Plate III.—**THIRD EPOCH.**—*Secondary Period.*
The reptilian age; higher forms of vegetation; reptiles crept from the water upon dry land and winged animals appeared.

The advocates of the development theory have had much difficulty to contend with in the attempt to demonstrate the truth of the position that they have taken. It could easily be shown that by domestication and training, under a change of circumstances, one hundred and fifty varieties of pigeons could be produced from the one species. But each and every one, after all was done, would be a pigeon. It could easily be demonstrated that the various kinds of dogs, some of which were a hundred times larger than others, all came from one variety of dog; but facts demonstrated, also, that dogs were never anything but dogs. Thus of every other species of animals. So limited was the knowledge of creation; so small had been the range of observation; so narrow was the idea of the origin of life, and so prejudiced were the majority of people against a progressive development, and so plain was the fact that the same species, either a horse, a hog, or an oak, always remained essentially the same—only modified; so plain was all this, and so averse were even the best minds to changing their long-established views, as to make the presentation of the development theory, an exceedingly difficult and laborious task.

Geology first came to the aid of the philosopher, and proved by earth-formations that the earth was hundreds of thousands, and, possibly, millions of years old; that fossil remains of animals had been deposited tens of thousands of years; that a large share of the remains thus found were of animals, reptiles and birds that had become extinct; and while often large were coarse, and of a lower order than any now existing.

These discoveries gradually led the scientists on in their investigations; the fact of tens of thousands of years being given for an animal to change its character, greatly assisting in the establishment of the development idea. The careful study of the anatomical structure of animals also demonstrated how circumstances had changed their character. Thus, under the skin of some snakes they found partially developed feet, indicating that at a former period this species of snake was probably a lizard; that its short and clumsy legs were not sufficient for rapid propulsion; that it had resorted to the wriggling movements as the easiest and most speedy locomotion, and so legs were useless and gradually disappeared. That certain reptiles, forming the habit of springing upon their prey, developed the wings. This is proven by the remains of birds, very recently found, which have teeth, showing the connection between the reptile and the bird kingdom. These remains supply what has long been regarded as the "missing link." The winged reptile, under varying conditions, changed its character entirely; nature supplied it with hair, and it became a bat, and under other conditions it acquired feathers.

Never having a chance to fly, it will be seen how a bat could change to a mouse, which might develop to a rat, which might learn to burrow under ground, and in long ages could change its character to that of a woodchuck, and from that to a prairie-dog, which long periods of time might bring up to the intelligent shepherd or Newfoundland-dog.

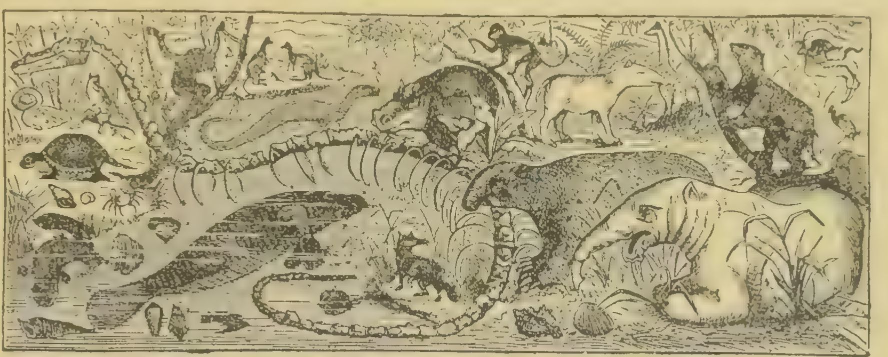


Plate IV.—**FOURTH EPOCH.**—*Tertiary Period.*

New kinds of vegetation came forth. Higher forms of life appeared, and hair and fur-bearing animals were developed.

That the mouse and rat, in certain portions of the world, might, to avoid their enemies on the ground, take to the trees as a place of abode—might learn to use their tails as do the monkeys, and, in fact, through long ages develop to the size and intelligence of the monkey. In time, the necessity no longer existing of remaining in the trees, he would spend his time on the ground; his tail would become unnecessary, as it is with the ourang-outang and the gorilla. That through long ages the gorilla has gradually developed to the conditions of the lowest cannibal savages, which wild and barbarous tribes in time became civilized.

Plate V.—**FIFTH EPOCH.**—*Quaternary Period.*

Highly matured condition of the earth: fitted for the support and production of the highest grades of intelligence among animals up to man.

What the Progressionists Believe.

While a variety of opinions exist among the evolutionists, their belief is essentially this:

That there exists in the infinitude of space unnumbered suns, each the center of a planetary system, which, through the law of gravitation, continually revolve around a great central sun. That the planets about the sun are born of the sun. That the planets dependent upon our sun have all come from it. That in the process of birth the sun throws off a gaseous ring, which, having attained a certain degree of maturity, breaks and gathers in a nebulous mass, making a spot on the sun. In time, this substance, thus thrown off, which is a molten mass of intense heat, like a rain-drop in space, assumes a spherical form, takes its orbit for revolving about the sun, gradually cools on the surface, and a crust is formed which, as the ages and the centuries go by, gradually thickens. This crust, rent and disturbed by the heat within, rises and falls, making great irregularities of surface. Hence the mountains and the valleys were formed. That planets themselves have the power to throw off and produce other worlds, which are the moons that belong to various planets.

The belief is that the earth was born thus of our sun; that hundreds of thousands and, perhaps, millions of years have passed since it came from the sun; that its irregularities of surface have been produced by internal commotion and volcanic eruptions. The evolutionists bring forward as proof that the interior of the earth is a mass of fire, the fact that for every 100 feet we go towards the center of the globe the heat increases one degree. At 10,000 feet, towards the center, water boils. At forty miles in the earth, 1,800 degrees is reached. At that point iron would melt, and, at seventy miles in depth, everything must be in a liquid state. A further proof that the interior of the earth is on fire is shown in the flame emitted by volcanoes, and the hot water which comes from boiling springs.

In the creation of this world, when the earth had become sufficiently cooled to cause the gaseous moisture upon its surface to condense, clouds were formed, and rain began to fall, which collected in the low places on the earth's surface and made the oceans. The first crust formed became what is now known as the hardest rock, such as granite, syenite, porphyry, etc., in what were imbedded the heaviest metals.

In process of time this layer was overspread, through volcanic eruption, by another layer, which became what is known as slate-rock, clay-slate, etc. Through the action of water, heat and air, this rock became so soft as to produce soil. When the conditions had become matured sufficiently, a combination of substances, such as carbonic acid, water and ammonia, made what is termed "protoplasm," a compound which is the basis of all life, from which may come at any time the order of vegetation, and all forms of animal life.

DESCRIPTION OF THE PLATES.

Representing the Primordial Age, Primary, Secondary, Tertiary and Quaternary Periods, and the Ascending Series.

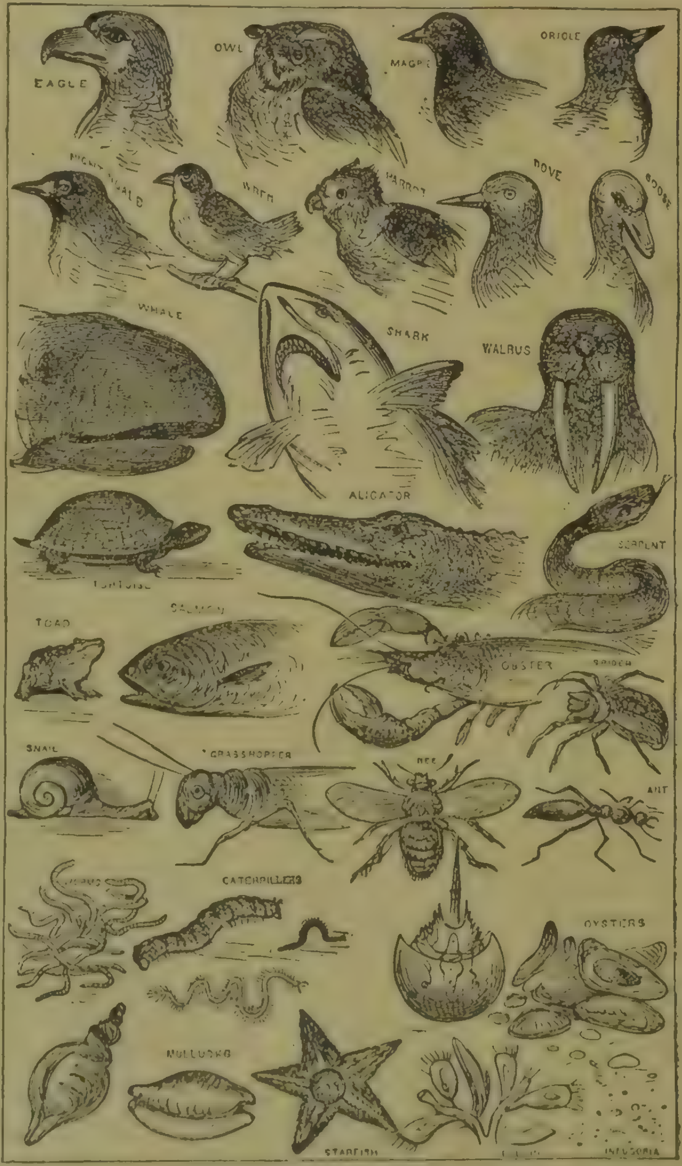


Plate VI. **ASCENDING SERIES.** *Grades of Intelligence.*

Showing the progress of development through the various grades of intelligence from the lowest forms of life up to the king of birds.

PLATE I.

Primordial Age.

Of life on the earth, first came the lowest of vegetation, such as the mosses, which gradually progressed to the higher orders. The first forms of life, largely dependent upon moisture for sustenance, lived in the water and gradually developed to the shell-fish, headless insects, and animals of various kinds. This is termed by the philosophers the primordial age.

This age is supposed to cover an immense period of time. The layers of earth and rock formed in this period, during which the interior fires were receding from the earth's surface, are over 70,000 feet thick, but of the fossil remains found in them there is no evidence of land animals.

PLATE II.

Primary Period.

This was followed by that known as the primary period, an epoch of time when the fire receded and the earth's crust thickened 42,000 feet. The water animals in this period on the earth's surface multiplied and developed to fishes, and came up to the lowest of those orders that divided their time between water and dry land, such as lizards and reptiles of various kinds.

PLATE III.

Secondary Period.

In the secondary period, the belief is that the fires receded into the earth, and the earth's covering was increased 15,000 feet in thickness. At this time the animal kingdom developed to frogs, crocodiles, turtles, dragons, and other immense water animals, traces of which are sometimes found. Among these were the enormous saurians which, covered with scales like the crocodile, had four legs and resembled great lizards, having claws with which to capture their prey, and teeth which enabled them to masticate their food. Their skeletons abound in the museums of natural history. There were reptiles with wings, and in the latter part of this period birds were developed. There was also a colossal growth of vegetation, much of which, in various localities, turned to coal.

PLATE IV.

Tertiary Period.

In the tertiary, or third period, the trees progressed to the putting on of leaves, and the animal creation developed up to those that nursed their young, such as the whale and dolphin, in the waters, and the species of animals from which came the horse, rhinoceros, elephant and swine, and the predecessors of the monkey, ourang, chimpanzee, the gorilla and the mammoth.

PLATE V.

Quaternary Period.

In the quaternary, or fourth period, came the present development of the vegetable kingdom, animal life as it exists to-day, and man perfected as he is at the present time.

The scientists attempt to class all development on the earth's surface into these five great epochs of time, one period gradually running into another, so that there is no sharp division between them.

The claim is that this progress is still going forward, and probably will continue for thousands of years, until the earth's crust shall become so thick and the earth so cold that life can no longer be supported upon it. At that time all animal life will have ceased to exist, vegetation will no longer retain life, and the earth will be dead, as many other planets are supposed to be that revolve in space.

PLATE VI.

Ascending Series.

This plate is designed to show the varying grades of physical development and intelligence, from the lowest orders of animal life up through to the highly intelligent of the feathered kingdom.

In the lower right hand corner of the plate is seen the infusoria. A drop of water allowed to be exposed on a vegetable or animal substance in the summer sun, will, in a few days, be found covered with a thin film of matter, which often presents the varying shades of rainbow colors. Microscopic examination of this stagnant water will reveal a great number of moving animalcules. This plainly indicates that germs of life are floating in the air, and only want the necessary conditions to reveal themselves in active being. This grade of life is lowest in the scale of animal existence of which the naturalist has any knowledge.

One of the next higher in order is the polypi. This might be taken as a species of animal life, but examination shows that it possesses an aperture that serves as a mouth, and various rootlets which are used as arms in capturing prey and feeding itself.

The star-fish is one of a numerous family of the radiata, which, having an intestinal canal, make another step upward.

The mollusks, possessing an alimentary apparatus, heart, liver, and the evidences of lungs and breathing power, belong to a still higher class. These include the oyster, the clam and the animals that reside in shells, whose infinite variety of color and form make always a pleasant study to the naturalist.

The crawling worms and the caterpillars that change their form to the bright winged butterflies, occupy a still higher range.

Above these yet is the patient, cunning ant; the busy, ingenious bee, and the hungry grasshopper. In this class of life there is exhibited the sense of sight and considerable evidence of reasoning power.

The spider and crab belong to another and yet higher order.

In the fish we reach the first form of animal being possessing a backbone and spinal cord. We have now reached a scale of development in animal life which exhibits arteries, veins and red blood.

The creature, however, like the frog that can come forth and subsist upon dry land, is yet higher in the scale; but the alligator, the turtle and snake, though all cold-blooded, are yet in advance of the frog.

HIGHER ORDERS OF ANIMALS.

Representing the Ascending Series, beginning with the Hippopotamus, a water quadruped, up through to Man.

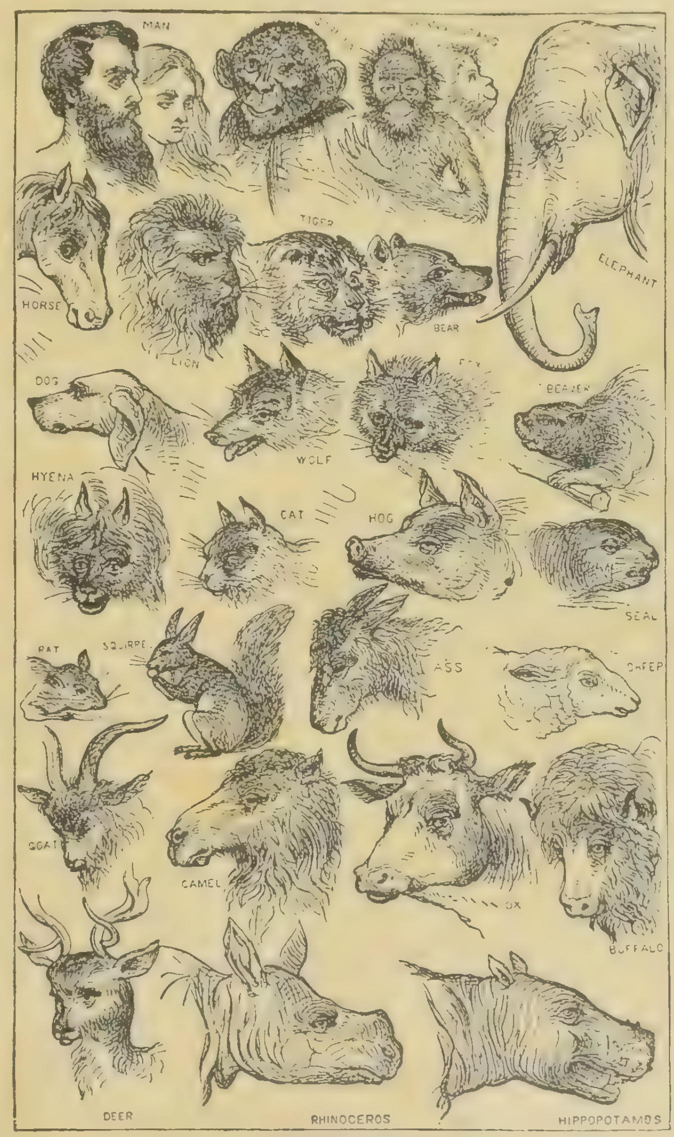


Plate VII. **ASCENDING SERIES.** *Grades of Intelligence.*
Showing the varying degrees of development and brain power, among different kinds of animals.

The walrus, the whale and other animals in that class, bring us up to the warm-blooded orders and usher us in among the fowls of the air, the unnumbered kinds of which are ever a curiosity and study to the student of nature. In this range of physical development the senses of feeling, hearing, seeing and tasting are very considerably developed.

While all the various kinds of the feathered kingdom have warm blood and brain sufficient to enable them to acquire considerable education, there is nevertheless much variety in the natural brain development, and many and various are their characteristics, as shown in the tenderness of the dove, the talkativeness of the parrot, the melodious notes of the nightingale, the cunning of the raven, the dignity and the courage of the eagle.

PLATE VII.

Grades of Animals.

Having come through the grades of life that swim the water, that divide their time between the water and the land, and that fly in the air we come to other classes of animal life, the most of which have four legs, with which to walk the earth, and have hair or fur to protect them from the inclemency of the weather, a few exceptions being in those animals native to the warm climates, whose thick skins are such as to require no other covering.

The grade of animal life shown in plate VII. belongs in that known as the *mammalia*, a characteristic of which is that the young are born alive and are nourished with their own milk.

This illustration shows the gradually ascending grades. The gross, huge water animal, the hippopotamus, is surpassed in brain power by the deer, which is in turn excelled by the buffalo, the goat, the squirrel, the cat and the beaver.

The dog and the horse evince a high degree of intelligence, and so the grade progresses through the orders of the orang-outang and the gorilla up to man, whose degree of development varies from the low savage to the superior white Caucasian, who is master of all animal life below him.

Men Who Have Devoted Their Lives to the Investigation of Astronomical Science.

PYTHAGORAS.

ABOUT 580 years before Christ, was born at Samos the illustrious Grecian metaphysical philosopher, geometrician and astronomer, Pythagoras. At the age of eighteen he began his travels, visiting Phœnicia and Asia Minor, and even, it is said, Persia and India. He resided for twenty-five years in Egypt. Returning to Samos he taught geometry, subsequently settling at Crotona, where he established a school of philosophy that became famous. His pupils were required to observe strict silence for five years, to dress simply, eat but little and abstain from animal food. Women were admitted to his lectures, and fifteen attended his school. He taught the doctrine of "metempsychosis"—the passing of a human soul, at death, into the body of some animal, 1,000 years being required in this manner to expiate the sins of the human life and restore it to a blissful immortality. While he had many admirers and disciples, he was subjected to persecution and driven from Samos. He then took refuge in the Temple of the Muses at Metapontum, where it is doubtfully said that he starved to death about 497 years before Christ. While he entertained crude ideas concerning a future state of existence, it is doubtless true that he was one of the most learned of the philosophers who lived prior to the Christian era. As evidence of this it is claimed that he conceived the idea of the rotundity of the earth and that it revolved around the sun, which he believed to be the center of the solar system. This, in an age of such limited opportunity, was a wonderful discovery.

CLAUDIUS PTOLEMY.

THE life of Claudius Ptolemy, the distinguished astronomer, geographer and mathematician, is somewhat obscured by the absence of authentic records. Pelusium, in Greece, is mentioned as his birthplace, and the second century as the time of his career. His intelligence concerning the earth and the starry worlds around it, although varied and extensive, has been proven to be erratic in some of its conclusions. For instance, he projected the Ptolemaic system of astronomy, which placed our planet in the middle of the universe, so that the whole creation moves about it as a common center This theory was prevalently received until the present (Copernican) belief, which makes the sun the center orb of the solar system, was adopted a few centuries later. Ptolemy, however, was wise in much that he advanced concerning the heavenly bodies. His principal work, the "Great Astronomical Construction," contains a catalogue of the stars, following but improving that of Hipparchus, and treats of the correspondence of the earth with the other planets, the effect of the earth's position, etc. With all his errors he computed future eclipses with great exactitude and determined the orbits of the various planets. Nor was it in astronomy alone that he excelled his predecessors and contemporaries, for he wrote a geography, which became and remained a standard authority until the sixteenth century, and was the first to use the terms latitude and longitude in the earth's measurement, proving it to be a globe. His geography and its accompanying maps are still in existence. His various acquirements included a practical knowledge of music, and he wrote, or compiled, papers on that art, chronology, mechanics and astrology. The date of his death, as of his birth, is not known.

COPERNICUS.

THE discoverer of the system of planetary science which bears his name, Nikolaus Copernicus, was born at Thorn, Prussia, February 19, 1473. He studied medicine and philosophy, but abandoned them for mathematics and astronomy. He became mathematical professor at Rome, canon of Frauenburg, and an arch-deacon in his native town. His theory of a reform in the current (Ptolemaic) system of astronomy was first meditated in 1507, but its details were not completed until 1530, and so great was his fear of opposition that he did not publish his work until 1543, the year of his death. His system, now universally believed to be true, announced that the planets revolved around the sun, instead of the sun revolving around the earth — a theory which previously prevailed.

JOHANN KEPLER.

GERMANY produced one of the most famous of the world's astronomers in the person of Johann Kepler, at Magstatt, Wurtemburg, in December, 1571. His education was received at a monastic school and the university of Tubingen, at the latter of which he acquired a master's degree in 1591. Devoting himself to the study of astronomy he began his scientific career. Near the last of the sixteenth century he became professor of mathematics in the University of Gratz. About 1598 he assisted Tycho Brahe in preparing new astronomical tables, by order of the Emperor Rudolph II. Tycho died soon afterwards, and Kepler became the royal mathematician, but this did not keep him out of poverty, so that he resorted to astrology for support. Subsequently he made some important discoveries in the movement of certain planets in their orbits, and his theories and exposition of these were adopted as authorities. The labor and assiduity of Kepler in pursuing these studies were profound and earnest, yet he obtained little or no profit from their publication. Misfortunes overtook him, but still he struggled on, until he made his greatest discovery—that the squares of the periodic times of the planets are proportional to the cubes of their average distances from the sun. He also largely elucidated the truth of the Copernican system of astronomy. Pecuniary disappointments, however, continued to depress him, and finally threw him into a fever, which caused his death November 5, 1631.

GALILEO.

THE distinguished Italian astronomer and scientist, Galileo Galilei, a son of a nobleman at Florence, was born at Pisa in 1564. He was designed for the medical profession, but preferring mathematics instead, he attained such proficiency in this science that at the age of twenty-four he was appointed professor of mathematics at Pisa. There his opposition to the philosophy of Aristotle created so many enemies to him that he resigned in 1592, and accepted the professorship at Padua. He remained in the latter position eighteen years. In 1609, becoming acquainted with the invention of the telescope, he constructed one for himself, with which he discovered the four moons of the planet Jupiter, the phases of Venus, the starry nature of the milky way, the hills and valleys of the moon, and the spots on the solar disk, from the motion of which he inferred the rotation of the sun. Becoming convinced of the truth of the Copernican system of astronomy (the revolution of the earth on its axis, and the planets around the sun), he avowed his belief and was twice persecuted by the Inquisition, in 1615 and 1633, on the charge of heresy. On both occasions his tormentors required him to openly recant his belief in the Copernican system, but he is said to have stamped the earth with his foot after his last abjuration, with the remark, "It moves, nevertheless." Three years before his death he was stricken with blindness. In addition to the foregoing discoveries he noted the gravity of the atmosphere, invented the cycloid and simple pendulum, and was the first to make a clear exposition of the principles of motion. He died in 1642.

SIR ISAAC NEWTON.

THIS great philosopher was born at Woolsthorpe, Eng., Dec. 25, 1642. Being educated at Grantham school and Trinity college, Cambridge, he early evinced a talent for mechanics and drawing. At college he studied mathematics assiduously, in 1669 became professor of mathematics, and in 1671 a member of the Royal society. During his stay at Cambridge he made his three great discoveries, of fluxions, the nature of light and colors, and the law of gravitation—the latter suggested by seeing an apple fall from a tree. His "Principia," which unfolded to the world his theory of the universe, was published in 1687. He was elected member of the university in 1688 and 1701; was appointed warden of the mint, in 1696, and master of it in 1699. He was chosen president of the Royal society in 1703, and knighted in 1705. Died March 20, 1727. His theory of universal gravitation involved the principle (according to Sir David Brewster), "that every particle of matter in the universe is attracted by, or gravitates to, every other particle of matter, with a force inversely proportioned to the squares of their distance."

WILLIAM HERSCHEL.

ONE of the most distinguished of modern astronomers was William Herschel, who was born in Prussia, Nov. 15, 1738. Being the son of a musician, young Herschel was himself a player of military music besides being an organist. Astronomy was one of the occupations of his leisure, and to save the expense of purchasing a telescope he constructed one for himself, with great success. He also manufactured numerous others of great power. Forsaking music and prosecuting the study of astronomy, on March 13, 1781, he discovered a new planet, which he named Georgium Sidus (now Uranus). Continuing his astronomical researches, in 1816 he was knighted. Died Aug. 23, 1812. Of his numerous discoveries the following are some of the principal: Volcanoes in the moon; the sixth and seventh moons of Saturn; the six moons of Uranus, and others of less general interest, but of great astronomical value. His famous telescope, the expense of which was defrayed by King George III., of England, was forty feet long, with a four-foot mirror and weighed 2,118 pounds. Herschel was a member of the principal scientific societies of Europe and America, and the first president of the Royal astronomical society of England. Herschel's only son, Sir John F. W. Herschel, baronet, is another prominent English astronomer. He was born Mar. 7, 1792. In 1834 he established an observatory at the Cape of Good Hope, South Africa, at his own expense, remaining there and prosecuting his star-studies for four years (1834-'38) in the whole southern sky, deriving a vast fund of valuable astronomical and meteorological information. He published several scientific works, and received a high appreciation, with distinguished scientific honors and positions. His intellectual powers won him many golden opinions. Died May 11, 1871.

LAPLACE.

AN astronomer who won much distinction by his knowledge of the heavenly bodies and their motions, was Pierre Simon, the Marquis de Laplace, who began his existence at Beaumont-en-Auge, Lower Normandy, March 23, 1749. Although of obscure parentage, wealthy friends aided him in early life to gain an education at the college of Caen and the military school of Beaumont. Going to Paris when eighteen, he soon attracted the attention of the scientist, D'Alembert, by the production of a shrewd paper on mechanical principles, and through this influence Laplace obtained, about 1769, a professorship of mathematics in the military school at Paris. He died at Paris, March 5, 1827. His attainments in science, especially in astronomical discovery, evidence his great superiority over his contemporaries. His genius is best exemplified in his writings, which in some degree stand unrivaled by those of more modern scientists. His theories and celestial expositions are standard authorities in astronomical investigations, but his fame rests principally on his "Mecanique Celeste," a comprehensive epitome or analysis of astronomical learning, gathered from various sources.

What is Known
OF
Astronomy.

The Progress of Astronomical Science.

A VIEW OF the heavens on a clear night reveals a vast number of stars, and if in the right period in the month, a moon. By day the stars and moon have disappeared from sight and the sun is the only object visible in the heavens.

The study of these heavenly bodies occupied the attention of the ancients many centuries before the advent of Christ, but definite knowledge concerning them was very limited, and such may be said to be the case yet. With the introduction of the telescope, however, much information has been gained in the past three centuries.

Various were the conjectures of the ancients concerning the shape of the earth and the relations which the sun, moon and stars held to our planet, the impression being that the earth was flat, and was the center of the universe, the various heavenly luminaries revolving around it.

Six hundred years before the Christian era, Thales of Miletus, a Grecian philosopher, taught astronomy, and succeeding him came Pythagoras and Plato. Some of these conceived the idea that the world was round and that it had two movements, one being diurnal upon its axis and the other around the sun. They taught that the sun, which they thought the center of the universe, was a globe of fire, which lighted the moon and gave heat and light to the earth.

In the second century after Christ, Ptolemy, another philosopher, prepared a treatise on astronomy, the first systematic work of the kind, in which, rejecting the system of Pythagoras, he announced that the earth was the center of the universe and the heavenly bodies revolved around it. For thirteen centuries this idea possessed the inhabitants of the earth.

Near the middle of the fifteenth century, a Prussian physician, named Copernicus, announced his adherence to the Pythagorean theory that the sun instead of the earth was the center of the planetary system, was immovable, and the earth revolved around it between the orbits of Venus and Mars. Copernicus studied the subject for some thirty years and did much toward the establishment of the science of astronomy on a reasonable basis.

FIG. 1.--The Supposed Structure of the Universe.

THE infinity of space is supposed to be studded with untold millions of suns, each of which is the center of a group of planets, similar to our planetary system. These suns, each with the family of planets that circulate about them, it is supposed, could they be seen, would present an appearance similar to the illustration shown above. The immensity of creation can be dimly imagined when we consider that each of these groups is as great as is our solar system, and these groups numbering millions, billions and trillions of planets, vast numbers of which may be inhabited, extend into boundless space which no finite mind can comprehend.

Kepler, a German astronomer, succeeded Copernicus fifty years after, and demonstrated that the planets, instead of revolving around the sun in perfect circles, made their revolutions in an ellipse, and that the moons made also their revolutions in elliptic orbits. Kepler also determined the dimensions of the orbits of the several planets and their velocity of movement.

Galileo, an Italian, was busy about the beginning of the seventeenth century with the telescope in a survey of the heavens. His researches resulted in a close inspection of the moon, which very clearly determined its character. The satellites revolving about Jupiter were discovered, and many facts relating to the celestial bodies were made known.

Up to this point, however, while the dimension, orbits, velocity of movement, and revolutions of many of the planets had been fully settled, the power that held them in place and caused their movement was yet a mystery. Then came the discovery by Newton, an English philosopher, of the means by which all the heavenly orbs may be held in place by the law of gravitation; and later many discoveries by Herschel of heavenly orbs, among them being Uranus and various satellites. Astronomy with the aid of mathematics, which determines the equinoxes, conjunctions, and eclipses, has now settled itself into one of the positive sciences, concerning which considerable is known, and yet when a view is taken at night of the thousands of brilliantly shining orbs, as they appear in the heavens, and the question is asked, whence came these stars, are they worlds, and are they peopled, the mind is lost in conjecture and forced to the conclusion that we know indeed but very little.

Near the middle of the eighteenth century Laplace, a learned French astronomer, advanced the idea called the nebular theory,—a theory that has been largely adopted by the evolutionists and progressionists, that the heavens are studded with innumerable groups of planets, in the center of each of which is a sun around which a certain number of planets revolve in a manner similar to the movements of our planetary system. The idea was further advanced that the sun once filled all the space now occupied by the orbits of the several planets. That from the sun has been thrown off from time to time an emanation of gaseous substance which formed in a ring about the sun, and in due time broke, collected together and made a planet. That the sun has gone forward gradually contracting and throwing off rings thus until all the planets in the solar system have been in this manner developed.

That this solar system of ours, with its sun and planets revolving in space, is but one of millions of similar systems, thousands of whose planets are inhabited, while some once inhabited are dead, and others are yet too young and gaseous to admit of habitation.

That while the planets revolve around the sun, this sun with its family of planets revolves with many other systems around a greater sun, and this greater sun with its multitude of systems revolves around a great central sun.

The groups of planetary systems which fill immensity of space, each group of which with its sun is supposed to be revolving around a great center, is represented in Figure 1.

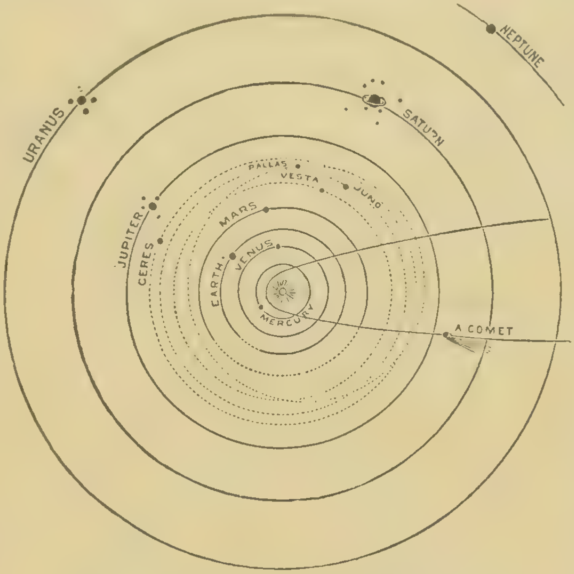


FIG. 2.--The Planets of our Solar System.

THE above illustration represents the sun with the planets as they revolve in their orbits about the same. As will be seen Mercury occupies the orbit next the sun. Venus is next. Outside and beyond that is the earth with its one moon. Mars is yet a greater distance away from the sun. Then are found still farther off several smaller planets. Jupiter, with its four moons, is plainly defined. Then Saturn, with its brilliant rings and eight moons, is one of the conspicuous objects in the heavens. Farther off yet is Uranus, with its four moons, and away millions of miles yet, in the distance, is Neptune. Crossing the orbits of these several planets is seen the erratic track of the comet which, in obedience to some unknown and peculiar law, comes from out the boundless space of the universe, crosses the path of the planets, wheels about the sun and returns again into the unknown abyss of space.

The definite intelligence which astronomers have of the heavenly bodies is confined to the size, revolutions, orbits, density, and conjunctions of the planets which revolve about our sun. The principal of these planets are named in their order as they go out from the sun as follows: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. There are also several moons and secondary planets that are mentioned elsewhere.

The relative size of each of the primary or principal planets in our solar system may be judged by the following comparison presented by an astronomer, the sun being represented as a globe two feet in diameter standing in an open field: A pin-head 164 feet away will represent Mercury; a pea 284 feet from the sun, Venus; another pea 430 feet, Earth; a large pin-head 654 feet, Mars; a medium-sized orange nearly half a mile from the globe represents Jupiter; a small orange four-fifths of a mile, shows Saturn; a small plum a mile and a half, represents Uranus, and an ordinary plum two miles and a half from the globe shows Neptune.

All the planets of our system together would not equal in bulk a six-hundredth part of the body of the sun.

A specific description of the sun and the several planets, their moons and the asteroids, herewith follows:

The Sun.

While the discoveries of modern astronomers and other scientific men have effected something toward developing the true nature and composition of the sun, it is still comparatively an unsolved problem. Science, however, establishes it as the center of our great solar system, the source of light and heat to all other planets within this system, and an immense power in the production and maintenance of animal and vegetable life. Of the sources of the sun's heat, nothing is positively known, although it is believed that it is derived from electrical influences.

Astronomy, with mathematics, places the sun's distance from the earth at 92,000,000 of miles, to us an incomprehensible distance, if we judge alone by our natural senses. It is around the sun that all the other planets within the solar system revolve at various periods, according to their position and distance from it. Thus Mercury, the nearest to the sun, is still 37,000,000 of miles from it, and passes entirely around it within eighty-five days, while the earth requires 365¼ days to accomplish one revolution.

The diameter of the sun is 882,000 miles, so that it is about 111 times thicker than the earth. It has no orbit, for it is stationary, but it revolves upon its axis, with the speed of 4,564 miles an hour, or more than four times faster than the earth turns upon its own axis; but with all this velocity, so large is the sun that it requires 25¼ days to complete one entire revolution.

So far as science has determined, the sun is a dark and solid globe, surrounded by two coverings of gaseous material, each of considerable thickness, the one nearest to the body of the sun not being light-giving, but somewhat like our own atmosphere, while the outer one is a light-giving gas or flame, from which our sunlight and heat are derived.

Some scientific people, judging from observations made during total eclipses of the sun, conclude that there is another, or third, gaseous covering to the body of the sun, above the second, which is cloudy and extends thousands of miles outward from the sun.

Others, considering the first or inner covering of the sun as an atmosphere of a cool material, producing a delightful climate on the body of the sun, have conjectured that animate beings inhabit the great planet; but of course this suggestion, however probable, is unsupported by facts.

Dark spots of irregular form, rarely to be seen with the naked eye, sometimes pass over the sun's surface from east to west, within a period of nearly fourteen days. They are supposed to be ruptures or openings in the outer fiery envelope of the sun. They usually present a dark nucleus, surrounded by a strip of shaded light, and that by a margin of light more brilliant than the sun itself. As a general thing the spots are neither permanent nor uniform. Sometimes small spots unite, and again large ones separate into smaller ones, some continuing days, weeks or months together, while others appear but a few hours. Galileo is said to have first discovered sun-spots about 1611; since then observation has shown that they appear almost every year, but from 1676 to 1684, none were seen. Some of the largest have been estimated to be from 30,000 to 50,000 miles in length, and sometimes a spot seems to be spanned with a bridge of light. See spots on the sun, Fig. 4.

Mercury.

With the exception of the asteroids (See Astronomical Dictionary), Mercury is the smallest of the principal planets in our solar system, its diameter being only 2,984 miles. Its distance from the sun is nearly 37,000,000 miles. Turning on its axis from west to east, at the speed of 370 miles an hour, it performs one revolution within twenty-four hours, five minutes and twenty-eight seconds, so that its day is a trifle longer than ours It moves in its orbit around the sun at the astonishing velocity of 110,725 miles an hour, thus perfecting an entire revolution in eighty-eight days, which is the length of its year, equaling about three of our months. Telescopes have revealed some of the mysteries of its surface, and one mountain (it is said) has been discovered in its southern hemisphere that is estimated to be ten and a half miles high. Nothing is known of its inhabitants, if any there be, but it is demonstrated that the light and heat of the sun on the surface of this planet are seven times greater than on the earth's. The nearness of Mercury to the sun prevents, except at certain periods, the correctness of observations afforded by most of the other planets.

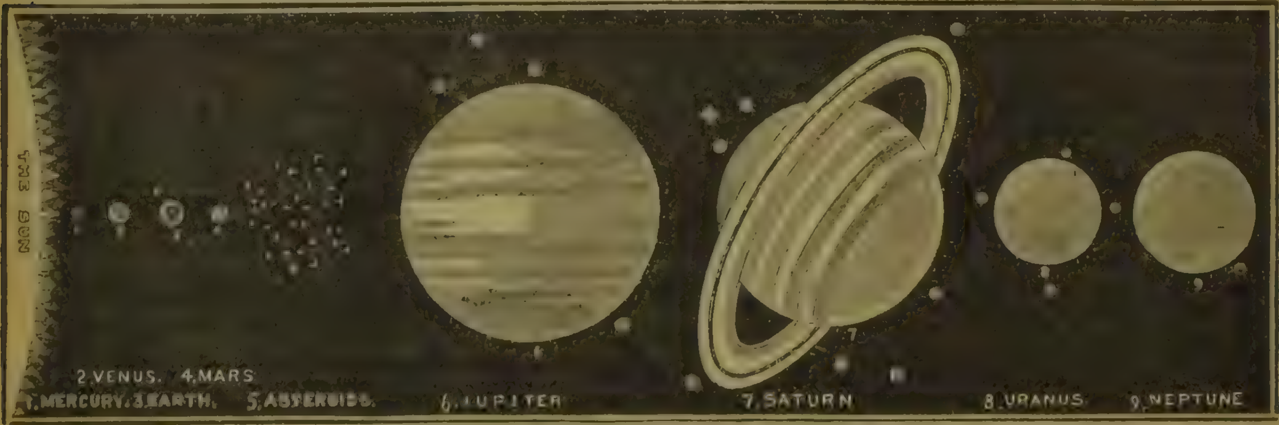


FIG. 3.--The Relative Sizes of the Planets.

Venus.

This is the second planet from the sun, and the brightest star in the heavens. It is about 68,000,000 miles distant from the sun, around which it revolves from west to east in 224⅔ days, moving in its orbit at the rate of 80,000 miles an hour. Its true diameter is 7,621 miles, but as its distance from the earth constantly varies, its apparent size and brilliancy also continually change. It turns upon its axis once in twenty-three hours, twenty one minutes and seven seconds, and its year is equal to about thirty-two of our weeks. Venus is best known to us by her constant position either as the earth's evening star or morning star, continuing in each of these offices alternately 292 days, appearing as the former in the western horizon and as the latter in the east. The change from one to the other is wrought by its orbital departure from the sun and its return. It is called one of the "interior" or "inferior" planets because, like Mercury, its orbit is between the sun and the earth. Twice in a century Venus passes between us and the sun, traversing the disk of the latter. This is called the "transit of Venus," and is considered among astronomers one of the most interesting of celestial events. In December, 1874, it attracted universal attention, and in 1882 this phenomenon again occurred, creating no less interest than before. Mountains of great height have been discovered on its surface, which is believed to be mostly covered with water. Whether it is inhabited or not its climate, on the plains, is thought to be warmer in summer than ours, with a less degree of average coolness in winter

The Earth.

The earth on which we live, and from which all our astronomical phenomena must be observed, is the third planet in our system from the sun, being distant from it about 92,000,000 miles. It is a sphere, or globe, in form, but not perfectly round, as it is considerably flattened at the north and south ends, which we call the poles, or ends of the imaginary axis on which the whole structure is supposed to turn from west to east once in twenty-four hours. This revolution is called "diurnal" because it forms one entire night and day. The earth has a circumscribed pathway through space, called its orbit, over which it passes around the sun once in 365¼ days, thus measuring one of our entire years. Our globe is composed of seven strata, or layers of different sorts of rocks and earth, and is about 8,000 miles in thickness through its center. It has one satellite, or moon, (see "Moon," in the following Dictionary), and contains 1,300,000,000 inhabitants. As large and wonderful as it seems to us, it is in size, as compared with some of its sister planets, and especially the sun, a very insignificant affair. On the first of January the earth is about 3,000,000 miles nearer the sun than on the third of July, but its surface being slantingly placed toward the sun at the former period, the heat is lessened instead of increased. The earth revolves on its axis at the speed of about 1,000 miles an hour, and on its journey around the sun at 68,000 miles during the same time. About two-thirds of its surface is water. (See "Seasons," "Atmosphere," and "Moon.")

Mars.

Mars is the fourth planet as regards distance from the sun, and the first of the "exterior planets," or those whose pathways around the sun are outside that of the earth. It is to us a fine cherry-colored star, whose brilliancy increases or decreases in proportion as it approaches or moves away from the earth, varying from 50,000,000 to 240,000,000 miles. Its average distance from the sun is 145,000,000 miles; its average rate of speed in its own orbit around it is 55,000 miles an hour, and one complete revolution on its axis requires twenty-four hours, thirty-nine minutes and two and one-half seconds, so that its day is something longer than ours. Its average diameter is 4,222 miles at the equator, and about one-sixteenth less at the poles. Mars, it is claimed, has two moons. Its year comprises about 687 of our days, or one year and ten and a half months. Its atmosphere is much thinner than ours, it has seasons resembling ours, and the telescope has revealed to us the existence on its surface of oceans, continents, mountains, arctic regions, hills, valleys and rivers, similar to ours. That animals, and perhaps beings superior to ourselves, inhabit Mars is conjectured as reasonable, for the planet seems fitted for such animated creations, and nothing, it is said, was ever made in vain.

The Asteroidal Planets.

See "Asteroids," "Ceres," "Juno," "Pallas" and "Vesta," in the following Dictionary.

Jupiter.

This, the largest of all the planets in our solar system, and one of the brightest, has an average distance from the sun of about 480,000,000 miles. Its diameter, or thickness at its equator, is about 91,000 miles, or twelve times as great as that of the earth at our equator, while its surface exceeds in area that of the earth 1309 times. Although it moves in its pathway around the sun at a speed of nearly 30,000 miles an hour, it requires almost twelve of our years (4,332½ of our days) to accomplish its annual circuit. One peculiarity of this planet is the fact that it revolves on a perpendicular (or upright) axis—standing, as it were, straight on end, instead of a slanting position—at the speed of about 28,000 miles an hour, accomplishing one whole daily revolution in nine hours and fifty-six minutes of our time. Its days and nights are of equal length; no change of seasons occurs, perpetual spring prevailing, and four moons contribute to the interest of its nights. Astronomers differ as to the character of this planet, some claiming that it may be covered with vegetation and inhabited by human beings and animals, while others object to this idea because of the singularly stormy appearance of its atmosphere, and the apparently unsettled condition of its surface, covered with vapors, as if it had not sufficiently cooled off, but still glowed with internal fires. Proctor thinks that it possesses self-illuminating properties. To us it appears of a cold, steel-blue color.

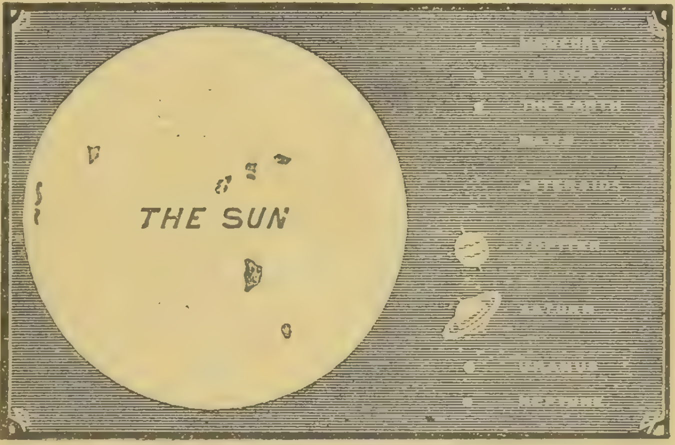


FIG. 4--Size of the Sun Compared with the Planets,
Showing Spots upon the Sun.

Saturn.

Outside of Jupiter and inside of Uranus is the orbit, or pathway around the sun, of Saturn, a planet 849 times as large as our earth. Its distance from the sun is 872,132,000 miles; its thickness, at its equator, is 71,903 miles, and at its poles 64,213 miles. It moves around the sun at the rate of 22,306 miles an hour, requiring twenty-nine and a half of our years to accomplish one of its annual circuits. It turns very rapidly upon its axis, making a complete revolution once in ten and a half of our hours, its year containing 25,150 of these short days. Saturn has eight moons, and derives great interest from a broad and magnificent zone, or ring, above and around its equator, encircling it with perpetual light, brighter to the observer than the planet itself. This zone consists of two great rings having a common center, and divided by a dark band. The spread of the outer ring is 169,530 miles, its thickness 10,160 miles; the extreme spread of the inner bright ring is 146,769 miles, its thickness 16,503 miles; the dark band between the bright rings is 1,725 miles wide, and the distance between the planet and inner bright ring is 20,427 miles. These two bright rings and dark band move regularly around the ball of the planet over its equator. The inner one is believed to be nebulous, and the outer one and dark space to consist of solid material, like that of the planet itself. Speculation as to whether Saturn is inhabited is averse to that belief, as the planet's form has been known to change in such a manner as to make it inconvenient for actual settlers by the upheaving of the soil.

Uranus.

This planet, whose distance from the sun is 1,822,360,000 miles, was discovered by Dr. Herschel, in 1781, and received his name, but was afterwards known as Georgium Sidus, being so called in honor of George III., of England. Its diameter, at the equator, is 34,331 miles, and it is said to revolve on its axis once in seven hours and five minutes. It moves in its magnificent pathway around the sun at the rate of 15,600 miles an hour, but such is its sweep in the universe that each annual revolution occupies 30,687 of our days, or a trifle more than eighty-four years. Owing to its position on the outer bounds of our solar system, the sun must appear to its inhabitants as merely a brilliant day-star. Uranus has six moons, which, instead of revolving around it from west to east, as all other moons do around their respective planets, except in the case of Neptune, apparently move from east to west. Any conjectures as to the character of the residents of this far-off world, or its natural productions, must of course be only idle imaginings.

Neptune.

The outermost planet of our solar system yet observed, was discovered by the German astronomer Galle, September 23, 1846. Its distance from the sun is 2,745,998,000 miles, and it moves once around the central orb in nearly 164½ of our years. Its diameter at the equator is about 38,000 miles. Its daily revolution on its axis appears to be unestimated, and very little of its climatic, vegetable and animal peculiarities, owing to its great distance, is known. One moon has been discovered, but astronomers insist that this majestic planet is entitled to five more. The motion of the moon already observed is, like those of Uranus, contrary to the common movement of most planetary satellites. Leverrier noted and pondered over the perturbations of Uranus, measuring their intensity and direction, and concluded that a body far beyond the orbit of that planet was the cause of its irregularities. He wrote to Dr. Galle, requesting him to point his glass in a certain quarter, where he must find another planet. Dr. Galle did as directed, and thus Neptune was discovered.

ASTRONOMICAL DICTIONARY.

Words and Terms used in Describing Various Matters Relating to Astronomy.

Aberration—A small, apparent motion in the fixed stars, discovered in 1725.

Acceleration of the Moon—The moon's present period of revolution is shorter than formerly, owing to the increase or acceleration of its mean motion in its orbit.

Acceleration of the Planets—The increased rapidity of their movements while changing position from nearness to the earth to the farthest range of their orbits.

Acceleration (Daily) of the Fixed Stars—The amount by which their daily motion seems to exceed that of the sun, so that they reach the meridian of any place about four minutes sooner each succeeding day.

Acolyte—A star attending, as a companion, another star in its orbit.

Acronycal—A star that rises at sunset and sets at sunrise.

Adumbration—The faint shadow of the moon, shown in favorable weather, when it becomes "new," or during an eclipse of the sun.

Aerolite—A meteoric stone, or other substance, coming to the earth from far-off regions of space; supposed to be a fragment of another planet.

Alcyone—The most brilliant star in the cluster of the Pleiades (in the constellation of Taurus, the Bull), and surmised to be the central sun around which our solar system appears to be moving.

Aldebaran—The brightest star in the constellation of Taurus, in the group Hyades, in the face of the Bull.

Algol—A fixed star of the second magnitude in the constellation of Perseus.

Almanac—A calendar or record, published annually, of the months and days, with an account of the rising and setting of the sun and moon, the movements of other planets, and other astronomical and miscellaneous matters.

Alphonsine Tables—Astronomical tables, published under the auspices of Alphonso X., king of Spain, in the latter part of the fifteenth century.

Altair—The principal star in the constellation of Aquila, or the Eagle.

Altitude of a Star—The height of any star above the horizon, and is *true* or *apparent* according as it is reckoned from the sensible or rational horizon. The "parallax of altitude" is the difference of distance between these two horizons. See HORIZON.

Amplitude—An arc of the horizon intercepted between the east or west points and the center of the sun or stars at their rising and setting, it is "ortive," or eastern, when the star is rising, and "occiduous," or western, when the star is setting.

Annual Parallax—See PARALLAX.

Antarctic—The name of a circle of the globe which is opposite to the arctic, or northern pole, and is nearly twenty-three and a half degrees distant from the antarctic, or southern pole.

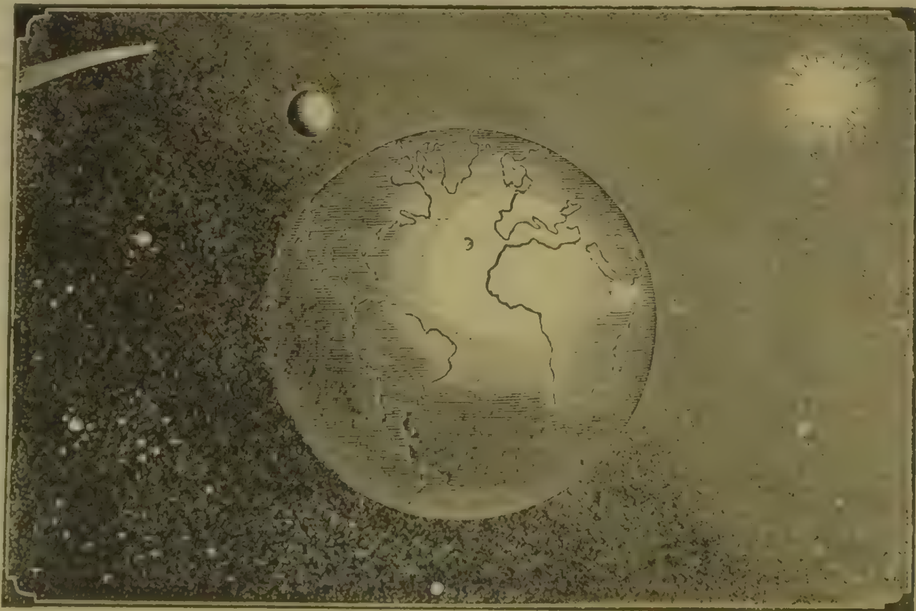


Fig. 5--The Earth as it Appears in Space.
Showing Earth, Sun, Moon, a Comet and various Planets as they revolve in the immensity of space.

Andromeda—A constellation of sixty-three stars in the northern heavens, representing a woman chained.

Anser—A star of the fifth magnitude in the Milky Way.

Annular—Having the form of a ring; annular space is the interval between an inner and outer ring. See ECLIPSE.

Anomalistic Year—The time that the earth occupies in passing through its orbit.

Aphelion—That point at which any planet is farthest from the sun. See APOGEE.

Aquarius (or the Water-Bearer)—A constellation in the zodiac, immediately south of the equinoctial, and the eleventh sign in the zodiac.

Aquila and Antinous—A double constellation, directly south of the Fox and Goose and immediately west of the Dolphin; it contains seventy-one stars.

Arc Diurnal—That part of a circle described by a planet or star between its rising and setting; the "nocturnal arc" is that passed between its setting and rising.

Arctic Circle—That portion of the earth immediately surrounding the north pole, bounded by a line parallel with the equator about twenty-three and a half degrees from the pole.

Arcturus—A fixed star of the first magnitude in the constellation of Bootes.

Aries (the Ram)—A constellation now second in the zodiac, situated next east of Pisces, and containing sixty-six stars, nine of these are called "nautical stars," because sailors use them in determining their longitude at sea.

Armillary Sphere—An instrument arranged like a globe, but made of a number of circles of wood, metal or paper, representing the several circles of the sphere of the world put together in their natural order, the whole turns upon an axis within a horizon, which is divided into degrees, moves in every direction, and when revolved exhibits all the phenomena of the heavenly bodies.

Argo Navis (the Ship)—A constellation of the southern hemisphere, containing sixty-four stars, two of which (Canopus and Miaplacidus) are of the first magnitude; this constellation commemorates the mythological story of Jason's expedition to Colchis to recover the golden fleece.

Apogee—That point of a planet's orbit where it is most distant from the earth; this term, as well as "Perigee" (which see), was in use among the ancients; since modern astronomers have made the sun the center of the solar system, the terms "Aphelion" and "Perihelion" are more commonly used to express the same things.

Apparition—The visibility of any star; the "circle of apparition" is an imaginary line within which stars are always visible in any given latitude.

Appulse—The approach of a planet toward a conjunction with the sun or any of the fixed stars.

Apsides—The two points in the orbit of a planet, at the greatest and least distance from the sun.

Ascension—That degree of the equator reckoned from the first of the constellation Aries eastward, which rises with the sun or a star; and is either *right* or *oblique* according as it rises in a right or oblique sphere; "ascensional difference" is the difference between the right and oblique ascensions in any point of the heavens.

Asteroids—The numerous small planets whose orbits are situated between those of Mars and Jupiter; these include Astræa, Ceres, Iris, Hebe, Juno, Pallas, Vesta, and more than one hundred others, discovered since 1801. They are supposed to be fragments cast off from other remote planets, and are held in their places by solar influences.

Astræa—One of the asteroidal planets in our solar system.

Astrolabe—An instrument for taking the altitude of the sun or stars at sea, resembling the armillary sphere, but is not now used.

Astronomy—The science which treats of the sun, moon, earth, planets, comets, etc., showing their magnitudes, order and distances from each other, measuring and noting their risings, settings, motions, appearances, the dates and number of their eclipses, etc.; a mixed mathematical science.

Atmosphere, or Air—The invisible and delicate element which we breathe, and which closely envelops the earth to a depth of about forty miles; the substance of winds.

Auriga (the Wagoner)—A constellation in the northern hemisphere, between Perseus and Gemini, on the same meridian with Orion, containing sixty-six stars, of which Capella is one of the most brilliant in the heavens.

Aurora Borealis ("The Northern Twilight")—An extraordinary meteoric or luminous appearance, visible at night, in the northern heavens, usually known, also, as "northern lights;" its origin and nature have long puzzled the votaries of science, to whom its mysterious beauty ever attracts attention; its source is believed to be electrical; its phenomena varies almost constantly, assuming the form of an arch of light and brilliant, colored streamers flashing through the sky. In the vicinity of the southern pole, where it is called "Aurora australis," it is also witnessed.

Autumn—The third season in the solar year, which begins, in the northern hemisphere, September 22, when the sun enters the constellation of Libra, the Scales, and terminates about December 21; during this season the sun also passes through the other two constellations of Scorpio, the Scorpion, and Sagittarius, the Archer, and these three constellations are known as "Autumnal Signs."

Axis of the Earth—An imaginary line passing through the center of the globe, north and south, from pole to pole, about which its daily revolution is performed; the axis of the earth during its revolution round the sun remains parallel to itself, inclined to the plane of the ecliptic (which see) in an angle of 23½ degrees.

Axis of the Heavens—The axis of the earth, from north to south, or from east to west, presented both ways to the concave surface of the heavens.

Azimuth—An arc of the horizon intercepted between the meridian of the place and the vertical circle passing through the center of the object. "Azimuth circles" are imaginary great vertical circles passing through the zenith and nadir, and cutting the horizon at right angles. "Magnetical azimuth," an arc of the horizon, intercepted between the vertical circle (azimuth) passing through the center of any heavenly body and the magnetical meridian. "Azimuth compass," an instrument for defining, in a more accurate manner than by the common compass, the magnetical azimuth of the sun or stars.

Beard of a Comet—The rays which a comet sends out toward that part of the heavens to which its course seems to direct it.

Berenice's Hair—A beautiful cluster of forty-three stars in the northern hemisphere, about five degrees east of the equinoctial colure; its principal stars are between the fourth and fifth magnitudes.

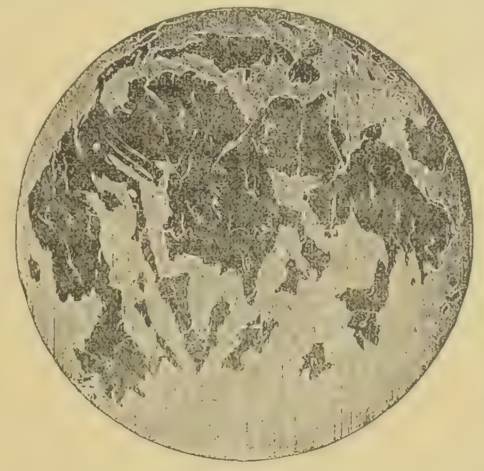


Fig. 6--The Moon.

The Satellite which revolves around the earth. 2,162 miles in diameter, with a surface thirteen times less than the earth, and giving light to the earth by reflection from the sun.

Binocular—See PARALLAX.

Bootes (the Bear-Driver)—A constellation of the northern hemisphere, said to contain fifty-four stars; represents a huntsman, with two greyhounds, pursuing the constellation of the Great Bear; its principal star, of the first magnitude, is Arcturus.

Bouleversement—A French-Latin word, expressive of "the wreck of matter and the crush of worlds;" a general disorder.

Cancer (the Crab)—The fifth constellation and fourth sign of the zodiac; situated in the ecliptic, with Leo, the Lion, on the east, and Gemini, the Twins, on the west; contains eighty-three stars, of which Beta, of the third or fourth magnitude, is the brightest, besides several double and nebulous stars; it reaches the meridian March 3. See TROPICS.

Camelopard—A constellation between the Pole Star and the Great Bear, and directly north of Auriga; it contains fifty-eight small stars, the five largest being of the fourth magnitude.

Canes Venatici—The constellation of the Greyhounds, which see.

Canis Major and Canis Minor—Two constellations in the southern hemisphere, known as the Great Dog and the Little Dog; the first, containing thirty-one visible stars, is southward and eastward of Orion; its principal star is Sirius, the Dog Star, the most brilliant in our heavens (see SIRIUS); the second, a small one, containing only fourteen stars, has Procyon, of the first magnitude, for its brightest star, and Gomelza, of the second magnitude, for its next most important; its place in the heavens is about five degrees north of the equinoctial, midway between Canis Major and Gemini.

Capricornus (the Goat)—The tenth sign in the zodiac, a constellation of fifty-one stars, the largest three of which are only of the third magnitude; situated in the southern hemisphere, south of the Dolphin and east of Sagittarius. See TROPICS.

Cassiopeia—A beautiful constellation in the northern and southern hemisphere, representing a queen seated in a chair, her head and body in the Milky Way and her foot resting upon the arctic circle—situated midway between Andromeda and the north polar star; it contains fifty five visible stars, the five brightest, of the third magnitude, and one or two smaller ones, forming the "chair;" the star Caph is useful to mariners and surveyors in determining the true position of the polar star.

Castor—A star of the first magnitude in the constellation of the Twins.

Celestial Globe—An artificial globe, like those representing the earth, which contains a view of the various constellations and signs of the zodiac in their places in the heavens.

Centaurus (the Man-Horse)—A constellation of the extreme southern hemisphere, containing thirty-five stars, including two of the first magnitude, which are not visible in the United States; it represents a horse's body with a man's head and arms, holding a spear.

Centripetal Force—That force which draws a body toward the sun; "centrifugal repulsion" is that power which the sun has to repel other bodies; both forces keep the planets in their places.

Cepheus (the King)—A constellation in the northern hemisphere, about twenty-five degrees northwest of Cassiopeia, to whom the king seems to extend his scepter, while his left foot is over the north pole; it contains thirty-five visible stars, the largest of which, Alderamin, is of the third magnitude.

Ceres—One of the asteroids, discovered January 1, 1801, by Piazzi, of Palermo, who named it after the goddess of grain and harvest. (See ASTEROIDS.) It revolves around the sun in four years and seven and one-third months; has a diameter estimated at 1,582 miles, and a velocity in its orbit of 41,000 miles an hour, and is never seen with the naked eye.

Cetus (the Whale)—The largest constellation in the heavens, filling a space fifty degrees in length and about twenty degrees in breadth; is situated below Aries and the Triangles, and contains ninety-seven stars, but none of the first magnitude, and only two of the second magnitude.

Circumference—The distance around the outer surface of a circle or sphere.

Columba (the Dove)—A constellation of only ten stars, only one of which is of the second magnitude; situated about sixteen degrees south of the Hare, and nearly on the same meridian with the "three stars" in Orion's belt; it was named after Noah's dove, sent out from the ark to find dry land.

Colures—Two great imaginary circles in the heavens, which intersect each other at right angles, dividing the ecliptic into four equal parts, and mark the seasons of the year; one passes through the equinoxes at Aries and Libra, and is called the "equinoctial colure;" the other, north and south, is the solstitial colure."

Comet—A round, transparent body, resembling a planet, which performs irregular or eccentric revolutions about the sun in long and narrow orbits, which have the sun in one of their focuses; it consists of a spherical, transparent light, enclosing a transparent nucleus, or ball, and a long train, or tail, of fiery particles, by which comets are distinguished from other heavenly bodies; it is estimated that there are upward of one million of these wandering wonders in space, and while many of them have regular times for returning to the sun and departing again at greater or less periods, others have been noted but once in human history as visitors to our solar system; their composition and mission are profound mysteries, which science fails to reveal; superstition has, however, made them objects of terror, in past ages, lest they portended evil to the world and its inhabitants.

Concave—The interior of an arched or spherical surface.

Complement—The distance of a star from the zenith.

Conjunction—The meeting of two planets in the same degree of the zodiac.

Constellation—An assemblage of fixed stars, imagined to represent the form of some creature or other object, such as a bear, a ship, or noted heathen god or goddess, from which they derived those names that are now used in designating and describing the stars.

Constellations (Origin)—The division of the heavens into constellations is very ancient, probably as old as astronomy itself. Frequent mention is made of them by name in the Christian Bible, especially in the books of Job and Amos; some of them are also mentioned by Homer and Hesiod, about 900 years before Christ. Originally there were forty-eight constellations known to Ptolemy, called the Old Constellations, to which others have been since added, until the list now comprises 100 or more.

Convex—The exterior surface of a sphere or arc—opposite of concave.

Corona—A luminous appearance, with divergent points of light, surrounding the dark body of the moon during an eclipse of the sun; also that phase of the aurora borealis, where a crown-like illumination diverges from the main arc near the north pole.

Copernican System—A particular system of the heavenly bodies first proposed by Pythagoras and afterwards revived by Copernicus, a Polish astronomer; their theory is the one now universally adopted, placing the sun in the center of the solar system, with all the other planets revolving round it in a particular and regular order.

Corona Borealis (the Northern Crown)—A beautiful constellation, situated directly north of the Serpent's Head, between Bootes on the west and Hercules on the east; it contains twenty-one stars, none of the first magnitude, six of which form a circular figure much resembling a wreath or crown.

Corvus (the Crow)—A small constellation east of the Cup, in the southern hemisphere, on the same meridian as Berenice's Hair, but as far south of the equinoctial as Berenice's Hair is north of it; containing nine stars, but none of the first or second magnitudes.

Cosmical—A term having reference to the grand harmonious system of the universe, or of the solar system, or to any heavenly body that rises and sets with the sun. See ACRONYCAL.

Coup-de-so-leil—The peculiar effect of the sun's heat upon men and animals known as "sunstroke."

Crescent of the Moon—The moon's appearance when new or in the last quarter.

Cygnus (the Swan)—A remarkable constellation, composed, according to different estimates, of eighty-one or one hundred and seven stars, situated in the Milky Way, directly east of the Lyre, and nearly on the same meridian as the Dolphin; the principal stars that mark the wings, the bill and the body of the Swan form a large and regular cross; it has but one star of the first magnitude.

Days and Nights—The unequal lengths of the days and nights are occasioned by the annual revolution of the earth around the sun, with its axis inclined to the plane of its orbit, the continuance of the sun above the horizon of any place depends entirely upon his declination or altitude at noon; at the vernal and autumnal equinoxes, March 21 and September 23, he has no declination, and the days and nights are then of equal length; and the sun's declination or obliquity between these two dates regulates the seasons, producing spring and summer on one side of the equator, and autumn and winter on the opposite side. An astronomical day is rated from noon of one day to the noon of the next; a civil day is reckoned from sunrise to sunrise, or sunset to sunset.

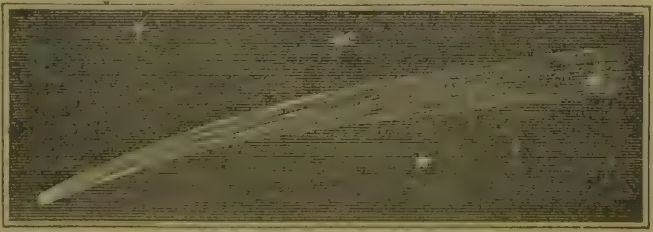


Fig. 7--The Great Comet of 1843,
The tail of which was 130,000,000 miles in length.

Depression—The distance of a star from the horizon below it; "depression of the pole" is said of a person sailing from either pole toward the equator; "depression of the visible horizon," or "dip," is its dipping, or sinking, below the true horizontal plane by the observer's eye being above the surface of the sea.

Descension—An arc of the equator which descends or sets with any sign or point in the zodiac, and descension is either "right" or "oblique" according as it takes place in a right or oblique sphere; "descensional difference" is the difference between the right and oblique descension of a star, etc.

Declination—The distance of any star or point of the heavens from the equator, either north or south; the greatest declination is twenty-three and a half degrees.

Degree—The three hundred and sixtieth part of the circumference of a circle.

Delphinus (the Dolphin)—A beautiful cluster of eighteen stars, only one being above the third magnitude, about fourteen degrees northeast of the Eagle; the four principal stars in the head form a diamond figure.

Diameter—A right line passing through a circle or sphere.

Difference of Longitude—An arc of the earth's equator, comprehended between the meridians of two places on earth.

Direction—The motion and other phenomena of a planet when it is direct, or going forward in the zodiac according to the natural order of the signs.

Disk—The body or face of the sun or moon as it appears to us.

Diurnal—Constituting the measure of a day—the time expended by any planet in making one revolution around its own axis; "diurnal arc" is the space apparently traveled by the sun or moon from its rising to its setting.

Draco (the Dragon)—A large constellation in the polar sky, containing eighty stars, four of which are of the second magnitude.

Dragon's-head—The ascending node of a planet, represented in almanacs by a figure exactly resembling the eye of a hook-and-eye; the name is derived from a fanciful figure caused by deviation of the planet from the ecliptic in passing from one node to the other.

Earth—(See Introduction to this Dictionary.)

Eccentric Circle—The circle that circumscribes the elliptical orbit of the planet.

Eccentricity—The distance between the sun and the center of the eccentric.

Equation of Time—The difference between mean and apparent time, or the reduction of the apparent unequal time or motion of the sun, etc., to equable time or motion.

Eclipse—"An eclipse of the sun takes place when the dark body of the moon, passing directly between the earth and sun, intercepts his light; this can happen only at the instant of *new* moon, or when the moon is in conjunction, for it is only then that she passes between us and the sun. An eclipse of the moon takes place when the dark body of the earth, coming between her and the sun, intercepts his light and throws a shadow on the moon; this can happen only at the time of full moon, or when the moon is in opposition, for it is only then that the earth is between her and the sun. The magnitude of the sun is such that the shadow cast by each of the primary planets always converges to a point before it reaches any other planet, so that not one of the primary planets can eclipse another; the shadow of any planet which is accompanied by satellites may, on certain occasions, eclipse its satellites, but it is not long enough to eclipse any other body; the shadow of a satellite, or moon, may also, on certain occasions, fall on the primary planet and eclipse it."—(*Burritt.*) Eclipses are total or partial, according to the relative positions of the two planets at the time of the eclipse, so that the whole of the eclipsed body may be darkened, or only a portion of it. An "annular eclipse" is one of the sun in which the moon conceals the whole of the sun's disk, except a bright ring around the border.—(*Brande.*) There cannot be less than two eclipses, nor more than seven, in any year; usually there are two each of the sun and moon.

Ecliptic—A great circle of the sphere in which the sun performs his apparent annual motion; it is supposed to be drawn through the middle of the zodiac, and makes an angle with the equinoctial of nearly twenty-three degrees and thirty minutes, which angle is called "the obliquity of the ecliptic."

Equator—An imaginary great circle drawn around the earth from east to west, half-way between the north and south poles.

Equator of the Heavens (or Equinoctial Line)—An imaginary great circle in our solar system, answering to the equator on the earth; whenever the sun comes to this circle, the days and nights are equal all over the earth.

Equinoxes—The times when the sun enters the borders of the constellations of Aries and Libra, about the twenty-first of March and the twenty-third of September, at which dates the days and nights are of equal length throughout the world.

Equulus (the Little Horse)—A small cluster of stars, about half-way between the head of the constellation Pegasus and that of the Dolphin; it contains ten stars, none of which are of more than the fourth magnitude.

Elliptical—An oblong figure with rounded ends.

Ellipticity—The deviation of the earth's shape from the form of a true sphere or globe.

Elongation—The removal of a planet to the farthest distance it can be from the sun, as seen from the earth.

Emersion—The reappearance of the sun and moon after they have undergone an eclipse; also of a star that emerges from under the rays of the sun.

Ephemeris—An astronomical almanac or table, showing the state of the heavens for every day at noon.

Epicycle—A little circle in the center of a greater circle.

Epicycloidal—A curve generated by a point in the circumference of a movable circle, which rolls on the inside or outside of the circumference of a fixed circle, as the moon's orbit in connection with the earth's around the sun.

Eridanus (the River Po)—An eccentric constellation of eighty-four stars, only one of which is of the first magnitude, meandering, like a river, irregularly through the heavens a distance of 130 degrees; that part of it which lies between Orion and the Whale is known as the "northern stream," and the remainder as the "southern stream."

Falling Stars—See METEORIC SHOWERS.

Forces (Attractive and Repelling)—See CENTRIPETAL.

Fixed Stars—Those which do not change their positions in regard to each other.

First Quarter—See PHASES.

Full Moon—That phase of the moon when the sun shines squarely upon its hemisphere presented to our vision, so that one-half of its surface is completely illuminated.

Gemini (the Twins)—The fourth constellation and the third sign in the order of the zodiac, between Cancer on the east and Taurus on the west, and south of the Lynx, the orbit of the earth passing through the center of the constellation, which contains eighty-five stars; one of these, Castor, is of the first magnitude, and Pollux of the second, both appearing in the head of the Twins, not far apart.

Geocentric—See PARALLAX.

Gibbous—The convex shape of the light part of the moon during her course from full to new when the dark part of that body appears horned—the opposite of the "crescent of the moon," which see.

Globe—An artificial round body, solid or hollow, on which is drawn a representation of the earth, or of the heavens; the first is called a terrestial globe; the other, a celestial globe.

Gnomon—An astronomical instrument or apparatus for measuring altitudes.

Gravitation—That particular force which the earth possesses for attracting all exterior substances toward its own center, in a greater or less degree.

Greyhounds—A modern constellation, embracing two in one, was made by Hevelius out of the unformed stars of the ancients which were scattered between Bootes on the east, and the Great Bear on the west, and between the handle of the Dipper on the north, and Berenice's Hair on the south; the northern hound is called Asterion and the southern one Chara, and the largest star is of the third magnitude, in the neck of Chara.

Harmony of the Spheres—A kind of music, supposed by the ancients to be produced by the combined motions of the stars and planets.

Heaven—That immense region wherein the planets, stars and comets are located and perform their motions; commonly known as "the heavens," the astronomers having variously assumed as many heavens as they observed different celestial motions.

Hebe—One of the asteroidal planets in our solar system.

Heliacal—A term applied to the stars or planets when they rise and set with or at the same time as the sun.

Heliocentric—Whatever relates to the center of the sun. See PARALLAX.

Heliometer—A sort of telescope formed of two object-glasses of equal focal strength, placed side by side, and having but one eye-glass.

Hemisphere—One-half of the earth or any other sphere, real or imaginary.

Hercules—A constellation of 113 stars, none of which are of the first magnitude, situated in the northern hemisphere, with one foot resting on the head of Draco, at the north, Lyra being on the east of it and the Serpent and the Crown on the west. It represents Hercules, the mythological hero, clad in the skin of the Nemæan lion, holding a club in his hand, with the three-headed dog, Cerebus, at his left.

Herschel—(See the Introduction to this Dictionary.)

Horizon—"Apparent horizon," the apparent junction of the sky with the earth, at any standpoint on the latter, called, also, "Sensible Horizon." "Rational horizon—An imaginary great circle, whose plane, passing through the center of the earth, divides the heavens into two hemispheres, of which the upper one is called the visible hemisphere, and the lower one the invisible hemisphere; it is the plane of this circle which determines the rising and setting of the heavenly bodies."—(*Burritt.*)

Hydra—A constellation in the southern hemisphere, extending almost from the Little Dog to the Scales, a distance of over 100 degrees; it contains sixty stars, but none of the first magnitude. The center of this constellation is a crescent of six stars of the fourth magnitude, called the Cup. Hydra is also known as the Water-Serpent.

Immersion—A term applied to so near an approach of a planet to the sun that the former cannot be seen; also, the commencement of an eclipse of the moon—that moment when she begins to darken.

Impact—The single or simple act of one body upon another so as to set it in motion.

Ingress—The sun's entrance into a sign of the zodiac, or the entrance of the moon into the shadow of the earth, at the time of an eclipse.

Interior Planets—Those planets which are situated within the orbit of the earth.

Iris—One of the asteroidal planets in our solar system.

Juno—One of the asteroidal planets in our solar system. (See ASTEROIDS.) It revolves around the sun in four years and four and a half months, its average distance from it being about 254,000,000 miles, and moving in its orbit at the rate of 41,000 miles an hour. Its diameter is estimated at 1,393 miles. Its orbit is so eccentric that in perihelion it is nearer by 130,000,000 miles than when in aphelion, and owing to solar attraction, moves through the half of its orbit that is nearest to the sun in half the time that it takes to traverse the remainder.

Jupiter—(See Introduction to this Dictionary.)

Latitude on Earth—Parallels of latitude are small imaginary circles on the earth's surface running parallel with the equator on both sides of it; between the equator and each pole are ninety of these lines, each marking a geographical degree of about sixty-nine miles.

Latitude in the Heavens—The distance north or south of the ecliptic and at right angles with it.

Leo (the Lion)—The fifth sign in the zodiac and the sixth constellation, situated next east of the Crab and south of the Little Lion and the Great Bear; it contains ninety-five visible stars, and two—Regulus and Denebola—are of the first magnitude.

Leo Minor (the Little Lion)—Hevelius formed this constellation of fifty-three stars, including none of the first or second magnitude, out of stars unappropriated to other constellations by the ancients, between the Lion on the south and the Great Bear on the north.

Lepus (the Hare)—A constellation of nineteen stars, none above the third magnitude, directly south of Orion, with which it reaches the meridian January 24, and about eighteen degrees west of the Great Dog.

Libra (the Scales)—This seventh sign and eighth constellation in the zodiac, next east of the Virgin, contains fifty-one stars, none of them of the first magnitude; when the sun enters this sign, the days and nights are of equal length all over the world, suggestive of an even *balance*.

Libration of the Earth—A motion, real or apparent, of the poles, resembling that of a balance before coming to a rest—an oscillatory movement of the earth on its axis.

Libration of the Moon—An apparent irregularity in its motion

Limb—The utmost edge or border of the body of the sun or moon.

Longitude—An arc of the ecliptic intercepted between some given point called the first meridian and the meridian passing through the proposed place; this may be either east or west, according as it is reckoned on the east or west side of the first meridian.

Longitude on the Earth—Distance either east or west from some fixed meridian, measured on the equator.

Longitude in the Heavens—Distance east from the first point of Aries, the Ram, measured on the ecliptic.

Lupus (the Wolf)—A constellation low down in the southern hemisphere, next east of the Centaur and south of the Scales, containing twenty-three stars, none of the first or second magnitude.

Lynx—A constellation in the northern hemisphere, containing forty-four small stars, "and none of note," and is situated between the Wagoner and the Great Bear, and north of the Twins.

Lyra (the Harp)—A constellation in the northern hemisphere, south of Draco, between the Swan on the east and Hercules on the west, and contains twenty-one stars, of which Vega, of the first magnitude, is one of the most brilliant in the northern heavens; its surpassing brightness has attracted the admiration of astronomers in all ages.

Lunar—Relating to the moon, its phases, eclipses, effects, etc.

Lunation—Otherwise called a "synodical month," by which is meant one revolution of the moon, or the time between one new moon and another.

Mars—(See Introduction to this Dictionary.)

Meridians—"Imaginary great circles drawn through the poles of the world, cutting the equator and the equinoctial at right angles. Every place on earth and every corresponding point in the heavens is considered as having a meridian passing through it, although astronomers apply but twenty-four to the heavens, thus dividing the concave surface into twenty four sections, each fifteen degrees in width. These meridians mark the space which the heavenly bodies appear to describe, every hour, for the twenty-four hours of the day, they are thence sometimes denominated 'hour-circles.' In measuring distances and determining positions on the earth, the equator and some fixed meridian, as that of Greenwich" (or Washington) "contain the primary starting points; in the heavens these points are in the ecliptic, the equinoctial, and that great meridian which passes through the first point of Aries, called the equinoctial colure."—(*Burritt.*)

Magnetical Meridian—A great circle in the heavens which intersects the horizon in the points to which the magnetic needle (as the mariner's compass), when at rest, directs itself.

Magnitudes of Stars—Modern astronomers have been accustomed to distinguish stars in the various constellations by the letters of the Greek alphabet and also according to their sizes, ranging from the "first magnitude," or largest star, to the "sixth magnitude," or smallest star visible to the naked eye.

Mean—Average; intermediate between two extremes of quantity or situation; as mean motion, mean time, mean distance.

Mean Time—"Apparent time" is that indicated by the sun; "sidereal time" is that measured by the stars; "mean time" is that equably marked by a perfect clock, as if every day in the year is of a uniform length.

Medusa's Head—See PERSEUS.

Mercury—(See Introduction to this Dictionary.)

Meteoric Showers—The recurrence of meteors falling through space in great numbers at various periods has led to much study, observation and speculation on the part of scientific men, and certain data appear to produce the following conclusions: That the meteors have their origin beyond the limits of our atmosphere; on one occasion the height of the meteoric cloud, or radiant point, above the earth's surface was, according to Professor Olmsted's observations, not less than 2,238 miles; they are composed of very light, combustible materials; the cause of this wonderful phenomena is thus stated by Professor Olmsted in connection with the remarkable meteoric shower of November 13, 1833: "The meteors emanated from a nebulous body which was then pursuing its way along with the earth around the sun; this body continues to revolve around the sun in an elliptical orbit, but little inclined to the plane of the ecliptic, and having its aphelion near the orbit of the earth; the body has a period of nearly six months, and its perihelion is a little below the orbit of Mercury." Showers of meteors are now regularly expected November 13 and August 13, each year, although they sometimes fail to appear.

Micrometer—An astronomical machine which serves to measure extremely small distances in the heavens, etc. It is used in connection with the telescope or microscope, and there are several varieties of the instrument for different sorts of scientific observation.

Milky Way (the Galaxy)—This is that "luminous zone or pathway, of singular whiteness, varying from four degrees to twenty degrees in width, which passes quite around the heavens; the Greeks called it Galaxy, on account of its color and appearance; the Latins, for the same reason, called it Via Lactea, or the Milky Way."—(*Burritt.*) Astronomy develops the fact that this zone is composed of innumerable small stars, so many, indeed, that Dr. Herschel, with his best glasses, counted 558 stars in a single spot, without moving his telescope, and while he steadily gazed at one point and the motion of the earth brought new ones to his telescopic vision, there passed in one-fourth of an hour no less than 116,000 stars and on another occasion, in forty-one minutes, no less than 258,000 stars. It is also a belief of astronomers that all the stars of the universe are arranged in clusters, or groups; which are called nebula, or starry systems, each of which contain many thousands of stars; our sun, it is also said, belongs to the nebula of the Milky Way, and although at such an immense distance from other planets in that zone, is considered as near to any one of them as they are to one another. Of the character, motions and peculiarities of the innumerable stars that form the Milky Way, little or nothing is known, although it appears that they are unequally dispersed and arranging themselves into separate clusters; that various changes are taking place among the nebula, some increasing by accessions of stars, and others growing smaller by dissolution. More than 2,500 nebula have been observed, each of which may contain as many stars as the Milky Way, and human understanding fails to grasp the immensity of the visible universe.

Monoceros (the Unicorn)—A constellation containing thirty-one small stars, made out of those previously unformed which were scattered between the two constellations of the Great Dog and the Little Dog; extending a considerable distance on each side of the equinoctial; none of its stars are of more than the fourth magnitude.

Moon—The "lesser light" that was created to illuminate the earth in the absence of the sun. Recent observations indicate that it is a "dead planet," once filled with internal fires and volcanoes, which have burned out and left it a mountainous, desolate, barren waste, without an atmosphere or inhabitants. Its distance from the earth is about 240,000 miles; its diameter is 2,162 miles. Its apparent daily average motion in its orbit is more than thirteen degrees in a day, but this is understood as a motion in a small orbit, embracing a great number of degrees, with comparatively few miles. In the opinion of some astronomers this body was once attached to the earth, and when nebulous matter forming the latter contracted to its present size, was thrown off from it and became a satellite. The moon revolves once on its axis exactly in the same time that it performs a revolution around the earth, which is evidenced by its always presenting the same side to the earth, for if it did not rotate on an axis, every part could be seen from our own planet. It follows, then, that the moon's year contains but one day and one night, both together embracing twenty-nine days, twelve hours, forty-four minutes and three seconds. While revolving about the earth the moon is carried with it at the same time around the sun, so that its path is extremely irregular, describing during one of our years about a dozen curves around the earth and only one around the sun. The reason why the body of the moon is not seen in its *new* phase is because of its being in the dazzling light of the sun, and its position toward that orb as seen from the earth. The "Harvest Moon"—"The moon near to its full at the time of harvest in England, or about the time of the autumnal equinox (in September), when, by reason of the small angle of the ecliptic and the moon's orbit with the horizon, it rises nearly at the same early hour for several evenings." (*Webster Improved.*) "Horn-Moon" is the sharp point in the crescent form of the new moon. "Horizontal Moon"—Sometimes the moon, as well as the sun, when on the horizon at rising or setting, appears two or three times larger than when thirty or forty degrees higher in the heavens, although when measured by an instrument at the horizon its diameter is really not at all increased. This has puzzled the scientists greatly, but its cause is probably due to atmospheric causes affecting the eyesight. "Moon's Quarters"—See PHASES.

Nadir—That point in the heavens opposite to the zenith, and directly under our feet, in the lower hemisphere of the earth.

Neptune—(See Introduction to this Dictionary.)

Nebula—Spots in the heavens, some of which are clusters of very small stars, while others appear like luminous spots in various forms.

Nebular Hypothesis—A theory that from nebula in their earliest forms, planets, satellites and stars were produced by cooling, contracting processes, while revolving in space.

Nebulosity—A faint, misty light, surrounding certain stars.

Newtonian Philosophy—The doctrine of the universe as explained by Sir Isaac Newton, respecting the properties, affinities, forces, motions and laws of celestial and terrestrial bodies.

Nodes—Two points where the the orbit of a planet intersects the ecliptic; the northern or ascending node is called the dragon's head, and the southern or descending node, the dragon's tail.

Nocturnal—Relating to night; as a nocturnal arc—the arc in the heavens traversed by a star in the night.

Nucleus—The body of a comet, surrounded by its coma, or hair, otherwise called the comet's head; this nucleus is known to be transparent.

Nutation—A tremulous motion of the earth's axis, by which its inclination to the plane of the ecliptic is constantly varying in a small degree.

Obscuration — Hiding from view any heavenly body by clouds or eclipse.

Observation—The scientific noting of the phenomena of the heavenly bodies by means of any instrument.

Observatory — A place in some lofty situation prepared and fitted up with telescopes, quadrants and other instruments for the purpose of making astronomical observations. Those of Greenwich (England), Washington (D. C.), Paris (France), and Munich (Bavaria), are among the most noted of modern observatories. The ancient Chaldeans had similar observatories.

Observatory (Equatorial or Portable) — An instrument for solving numerous astronomical problems, such as finding the meridian, directing the telescope to any particular star in broad daylight, etc.

Occident — Westward, or the west, as the occident equinoctial.

Occultation — The obscuration, or hiding from view, of any star or planet by the interposition of any other body, as the moon. "Circle of occultation" is an imaginary circle around the poles which contains those stars that are not visible in our hemisphere.

Opposition — One of the aspects of the planets, when they are 180 degrees distant from each other, or in a diametrically opposite relation to each other

Optic Glasses—Instruments, as microscopes, telescopes, or spectacles for viewing objects otherwise difficult of observation. "Optic place of a star," that point of its orbit in which it appears to be to our eye.

Orb—A sphere, or ball, solid or hollow, especially one of the celestial spheres, as the sun, moon, or a star; also a celestial circle, as the orbit of a planet; also, a period of time marked off by a heavenly body.

Orbicular—Resembling, or having the form of an orb.

Orbit—The path of a planet or comet while pursuing its proper course through the heavens.

Orient — The east, opposite to the occident; the point of the sun's rising.

Orion—A magnificent constellation of about 2,000 stars, seventy-eight of which are visible, situated midway between the poles of the heavens and directly over the earth's equator, coming to the meridian about January 23. It represents a man in the attitude of assaulting the Bull, having a sword in his belt, a huge club in his right hand, and a shield of lion's skin in his left. Two of the stars are of the first magnitude, four of the second, three of the third, and fifteen of the fourth. It is full of interest to the astronomer.

Orrery — An astronomical instrument for exhibiting the several motions of the heavenly bodies, and derives its name from the Earl of Orrery, for whom, it was supposed, the first one was made, but this appears to be a mistake. It represents the principal planets all in their proper places, illuminated by the sun in the center, and revolving together in their various orbits

Oscillation — Swinging forward and backward, like a pendulum; a fluctuation or vibration between fixed limits.

Pallas—One of the asteroidal planets of our solar system, situated between the orbits of Mars and Jupiter, discovered March 28, 1802, by M. Olbers, of Bremen. Its average distance from the sun is 264,000,000 miles; it revolves around the sun in four years and seven and two-thirds months; it moves in its orbit at the speed of 41,000 miles an hour, and its diameter is estimated to be 2,025 miles, but little less than that of our moon.

Parallax—A change in the apparent place of any heavenly body when seen from different points of view. The greatest annual apparent change of place of a body as seen from the earth or sun is called an "annual parallax;" the difference between the position of an object as seen by one eye, and that in which it is seen by the other, the head remaining unmoved, is a "binocular parallax;" the apparent change of a body with reference to the earth's center is a "geocentric" or "diurnal" parallax; the parallax of a body with reference to the sun, or the angle extended beyond a body by lines drawn to the earth or sun, is a "heliocentric parallax;" the diurnal parallax of a star or planet when in the horizon, or the angle extended beyond the body by the earth's radius, is a "horizontal parallax." (*Webster.*)

Parallel—A name for lines, surfaces or bodies everywhere at an equal distance from each other. "Parallel sphere," the situation of the earth or other sphere when its equator coincides with the horizon and its poles with the zenith and nadir. "Parallels of latitude" are small circles imagined to be drawn on the earth's surface, north and south of the equator, and parallel to it. "Parallels of declination" are small circles imagined to be drawn on the concave surface of the heavens, north and south of the equinoctial and parallel to it, or as circles formed by applying the earth's parallels of latitude to the heavens above it.

Parhelion—A mock sun or meteor, or luminous appearance, sometimes seen a few degrees from either both sides, or on one side, of the sun, in frosty weather, supposed to be a concentrated reflection of the sun's rays upon the atmosphere, partaking of the nature of a halo.

Paraselene—A mock moon, or a meteor in the form of a luminous ring around the moon.

Pegasus (the Flying Horse)—A constellation of eighty-nine stars visible to the naked eye (none of the first magnitude), representing a portion of a horse with wings, in an inverted position; it is situated between the Swan, the Dolphin and the Eagle on the west, and the Northern Fish and Andromeda on the east, having an average length, east and west, of about forty degrees, and extending north from the equinoctial thirty-five degrees.

Penumbra—The partial shade or obscurity observed on the margin of the perfect shade in an eclipse; also, the zone of a lighter shade seen around each of the larger black spots on the sun's surface.

Perigee—That point in the heavens in which the sun or any planet is least distant from the center of the earth. Since the true center of motion has been discovered, the term "perihelion" is used to denote the corresponding points.

Perihelion—(See PERIGEE.) That point of a planet's orbit in which it is nearest to the sun.

Period—The entire revolution of a planet.

Periphery—The circumference of any circle, curve, etc.

Perseus — A constellation in the northern hemisphere, representing Perseus, son of Jupiter and Danae, who slew one of the three Gorgons (Medusa) and cut off her head, which also forms part of this constellation, crowned with coiling snakes. Sixty-seven stars compose this constellation, which is situated directly north of the Pleiades and the Fly, between Andromeda on the west and Auriga on the east. It contains no stars of the first magnitude.

Phases—The various "quarters," or appearances, of the moon at different epochs, presenting first a crescent of light, then a semicircle, then becoming gibbous, and lastly full, when it returns by the same gradation to the state of a new moon. These phases are produced by the varied positions of the moon in respect to the sun and earth.

Piscis Australis (the Southern Fish) — A constellation of twenty-four stars visible to the naked eye, directly south of Aquarius, the Water-Bearer, and representing a fish drinking the water that flows from the urn of Aquarius. Its position has been accurately determined, to assist navigators in finding the longitude in the southern hemisphere.

Pisces (the Fishes)—This constellation is now the first in order of the twelve constellations of the zodiac, and is usually represented by two fishes tied a considerable distance apart, at the extremities of a long undulating cord or ribbon. It occupies a large triangular space in the heavens, and its outline at first is somewhat difficult to be traced. The two Fishes and the cord between them make two sides of a large triangle, thirty and forty degrees in length, the open part of which is toward the northwest. This constellation is bounded north by Andromeda, west by Andromeda and Pegasus, south by the Cascade, and east by the Whale and the Triangles. (*Burritt.*)

Plane—An imaginary surface, conveying the idea of a straight line, "coinciding with, or containing, some designated astronomical line, circle or other curve; as the plane of an orbit, the plane of the ecliptic, or of the equator." (*Webster.*)

Planets—Stars that change their position, in distinction from the fixed stars. They are divided into two classes—primary and secondary; the first are those that are supposed to revolve around the sun, such as the Earth, Jupiter, Mercury, Venus, and others; the secondary include those which revolve around the primary planets, as our moon and the satellites of Saturn, Jupiter and Uranus. The original number of planets was six—Mercury, Venus, the Earth, Mars, Jupiter and Saturn, which were distinguished by some mark or attribute of the deities whose names they bore. Since then numerous other planets have been added—Uranus, Neptune, the Asteroids, etc. To understand the manner in which the planets are retained in their orbits, see CENTRIPETAL FORCE.

Planisphere—A projection of a sphere and its various circles on a plane, such as maps, etc.; especially of the celestial sphere, representing the various constellations, stars, etc.

Pleiades—A remarkable cluster of stars in the constellation of Taurus, the Bull. Only seven are visible to the naked eye; their names are Alcyone, Merone, Maia, Electra, Tayeta, Sterope and Celeno. The Pleiades, according to fable, were the seven daughters of Atlas and the nymph Pleione, who were turned into stars, with their sisters, the Hyades, on account of their amiable virtues and mutual affection. Merone married a mortal, and for that reason her star shines dimly. The number of stars developed in this cluster by the telescope varies from seventy-eight to two hundred.

Point — The name for certain parts in the heavens, as the cardinal points, solstitial points, etc.

Pointers — Two stars in the constellation of the Great Bear, so called because they always point nearly in a direction toward the polar star.

Polar Circles — Two small circles, each about sixty-six and a half degrees from the equator, being always at the same distance from the poles that the tropics are from the equator; the northern is called the arctic circle and the southern the antarctic circle. (*Burritt.*)

Poles of the Earth—The extremities of its axis—imaginary points on its surface of the sphere, two in number, the arctic or north pole, and the antarctic or south pole. Encompassed with perpetual ice and severe cold, no navigator has yet reached either of them. "Poles of the heavens"—The imaginary extremities of their axis. "Poles of the horizon"—Two points, one of which is directly overhead, called the zenith; the other, directly under foot, is called the nadir.

Polar Star, or **Pole-Star** — The present pole-star is the last one in the tail of the constellation of the Little Bear, near the north pole, which, owing to its nearness to the earth, never sets, and is therefore of great use to mariners in ascertaining the latitude, etc. "The time taken for one revolution of the pole of the equator around that of the ecliptic, or, what is the same thing, for the first point of Aries (the Ram) to perform a complete circle around the ecliptic is 25,800 miles; as a consequence it follows that the pole-star is not the same at different epochs; at present the (north) pole of the earth is approaching more nearly the direction of the bright star Polaris, but it will soon begin to recede from it, and some other star, coming more nearly in the direction, will be the polar star." (*Plummer.*) The present one is of the second magnitude.

Pollux—A star of the second magnitude in the constellation of the Twins.

Precession of the Equinoxes — A slow motion of the equinoctial points, by which they change their place, going from east to west, contrary to the order of the signs of the zodiac; in other words, the sun, in its apparent annual course, does not cross the equinoctial, in spring and autumn, exactly in the same places, but every year a little behind those of the preceding year; the equinoctial points do thus go back upon the ecliptic at the rate of about fifty and one-fourth seconds of a degree every year; therefore "recession of the equinoxes" would be a more appropriate phrase than "precession."

Ptolemaic System — The system of astronomy prepared by Ptolemy, the celebrated Egyptian astronomer and mathematician, founded on the theory that the earth is immovably fixed in the center of the whole universe, the sun, moon, planets and stars all moving from east to west around it once in twenty-four hours; this theory, however, has been set aside as erroneous. "Pythagorean system"—See COPERNICAN SYSTEM.

Quadrature — When the moon is midway between the points of conjunction and opposition, or ninety degrees from each (or a quarter-circle), it is in quadrature.

Quadrant — An instrument for noting the altitudes of the sun and stars; of these there are several sorts, but Hadley's quadrant is most esteemed.

Radiant Point—Any point from which rays of light proceed.

Radius Vector of an Orbit — Any line joining the sun to a planet. "Radius"—Half the diameter of a circle, or a straight line drawn from the center to the circumference of a circle.

Regulus—A star of the first magnitude in the constellation of the Lion.

Reflection — A motion of rays of light or heat, whereby, after falling upon, or striking against, a solid surface, are forced, or recede, from it.

Refraction—The bending or deviation of a ray of light from that right line in which it would have continued if not prevented by the thickness of the medium through which it passes; thus the sun's rays passing through our atmosphere are refracted or bent down, making the sun to appear higher than it really is.

Refrangibility — A disposition of rays of light to be refracted or turned out of a direct course, in passing out of one transparent body or medium into another. (*Webster.*)

Retrocession of the Equinoxes — The going backwards of the equinoctial points of the signs of the zodiac, the Ram and the Bull.

Retrogradation — A going backwards; a retrocession, recession or precession of equinoxes.

Revolution — The motion of any heavenly body in a circular line or orbit, until it returns to the same point again; also the revolving of a planet on its own axis, which is more properly a *rotation;* the earth revolves around the sun once a year, but rotates on its own axis once a day; this latter is called "diurnal revolution;" a "synodical revolution" is a period extending from one conjunction (as of the moon or a planet with the sun) to the next; a "sidereal revolution" is the orbit of a planet that returns to the same place in respect to the stars. [Note—So far as the asteroidal planets of our solar system are concerned, it is not known that they have a diurnal rotation on their axes.]

Rotundity—Roundness of form; spherical.

Sagittarius (the Archer)—The ninth sign of the zodiac, and a constellation of sixty-nine stars (none of the first magnitude), in the southern hemisphere, next east of the Scorpion.

Satellite — A secondary planet revolving around another, as the moon moves around the earth; the name is devised from the custom of eastern princes, who had satellites attending upon them as a guard.

Saturn—See introduction to this dictionary.

Scorpio (the Scorpion)—The eighth sign of the zodiac, and an interesting constellation in the southern hemisphere, situated southward and eastward of the Scales, and containing forty-four stars; one of these stars, Antares, is of the first magnitude, and the whole constellation is readily distinguished from all others by the peculiar luster and position of its principal stars.

Scruples Eclipsed—That part of the diameter of the moon which enters the shadow.

Seasons—The four portions or quarters of the solar year, namely: Spring, when the sun enters the constellation of Aries, the Ram: summer, when he enters Cancer, the Crab; autumn, when he enters Libra, the Scales, and winter when he enters Capricorn, the Goat. The regular rotation of these seasons produces seed-time and harvest on the earth, and is caused by the varied positions of the earth's surface toward the sun at different stages of its journey around it.

Secondary Circles—Circles which intersect the six greater circles of the sphere at right angles.

Secondary Planets—Those which revolve as moons or satellites around the primary planets

Selenography—A description of the face of the moon.

Serpent-Bearer — A constellation in the mid-heavens, whose center is very nearly over the earth's equator, opposite to Orion, and directly south of Hercules. It represents a man with a venerable beard, having both hands clenched in the folds of an enormous serpent, which is writhing in his grasp, and contains seventy-four stars, none of which are of the first magnitude. This constellation is also called Esculapius, the god of medicine.

Serpent—Four kinds of serpents have places in constellations—Hydra, south of the zodiac, below the Lion, Crab and Virgin; Hydrus, near the south pole; Draco, about the north pole; Serpens Ophiuchi, situated chiefly between the Scales and the Northern Crown.

Sextans (the Sextant)—"Urania's sextant," a modern constellation made by Hevelius out of unformed stars between the Lion on the north and Hydra on the south, and contains forty-one very small stars; it represents a sextant, an astronomical instrument resembling a quadrant.

Sidereal—Pertaining to any star or planet; as a "sidereal day," the time in which any star appears to revolve from the meridian to the meridian again, which is twenty-three hours, fifty-six minutes and four seconds of average solar time, there being 366 sidereal days in a year, or in 365 diurnal revolutions of the sun.

Signs—The ecliptic, like every other circle, contains 360 degrees, and is divided into twelve equal arcs of thirty degrees each, called *signs,* which the ancients distinguished by particular names. This division commences at the vernal equinox, and is continued eastwardly round to the same point again, in the following order: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, Pisces. The sun, commencing at the first degree of Aries about March 21, passes, at an average rate, through one sign every month. (*Burritt.*)

Sirius (the Dog Star)—A very bright star of the first magnitude in the constellation of the Great Dog. In ancient times the rising and setting of Sirius was watched with much solicitude. The Thebans determined the length of the year by the number of its risings. To the Egyptians it was ominous of agricultural prosperity or blighting drought, since it foretold to them the overflow of the river Nile (or Siris) when they sowed their grain. The Romans annually sacrificed a dog to Sirius, to court its favor. The Eastern nations looked to its rising as the precursor of great heat on the earth, hence to that portion of the year the ancients gave the name of dog-days. It is with us overhead in the day-time during the dog-days, and so invisible, and is at night in the lower hemisphere, but is visible to us about mid-winter.

Solar System — That system of astronomy which is founded on the theory that the sun is the immovable center of an important portion of the great universe, round which all the planets within a circumscribed circle revolve at different distances and within various spaces of time.

Solstices—The time when the sun is at the greatest distance from the equator (twenty-three degrees and twenty-eight seconds), which happens about June 21, when he enters the tropic of Cancer, or the summer solstice, and about December 21, when he enters the tropic of Capricorn, which is the winter solstice.

Spectroscope—An instrument similar to a spy-glass or telescope, used in making observations of heavenly bodies for the purpose of determining their physical constitution. This is accomplished by analyzing the light of objects, as the sun, moon, planets, stars, comets or nebula, by means of the spectroscope. The spectra of the planets Venus, Mars, Jupiter, and Saturn, show, besides the signs peculiar to the reflected light of the sun, signs which are evidence of the presence about those bodies of an atmosphere containing aqueous vapor

Stars—A general name given to the heavenly bodies seen from the earth, except the sun and moon. "Fixed" stars are those that do not change their positions in respect to one another. "Variable" stars are those whose brilliancy periodically or irregularly increase and decrease; some appear to be gradually gaining luminosity, and others are becoming more obscure, while some have suddenly blazed forth with great splendor, then become dim and finally disappear. "Clusters" appear at several points in the heavens, which, under the telescopic view, become groups of many stars; in the Pleiades, six or seven stars appear to the naked eye, but one astronomer affirms that he counted 200 in this cluster, and some clusters, it is estimated, contain at least 10,000 or 20,000 stars. "Double" or "Binary" stars are revealed by the telescope in various portions of the heavens, two or more stars being either placed very near each other and revolving around each other, and both around a common center, or else they may be at a great distance from each other, but nearly in the same line of vision from the earth. "Nebula" are light spots in the heavens, some consisting of clusters of exceedingly small stars, while others, like luminous clouds of different forms, resemble comets, rings, etc. What they are astronomy does not yet reveal. Many of the stars vary in color, curiously contrasting with each other in the heavens; Mars is a red star; Jupiter is of a cold, steel-blue color; some have green tints, some yellow, others are white, etc. At a moderate estimate man has discovered 13,000,000 stars. The enormous distances of the stars from our planet can only be generally referred to here, Sirius being twenty trillion miles away.

Sun-Dogs, or **Mock-Suns**—The sun shining on icy particles of the atmosphere. Sun-dogs occur during the cold season, in the early morning, and, when conditions are favorable, even late in the forenoon. When the air is full of floating frost crystals, after sunrise, sun-dogs may be formed before the vision of the spectator, as many as seven at a time, accompanied or joined by large bright circles, making a spectacle of unusual brilliancy. Sometimes one great bright spot will indicate the position of the rising sun on a cold, frosty morning, the image of which will be transmitted by refraction of its light in different directions and in contiguous portions of the heavens. Sun-dogs are thus (1) an effect of the sun shining on the frosty ice-crystals of the atmosphere, which produces, by the reflection of its light, a large bright spot or image of itself; (2) the refraction of light from this first bright image into the surrounding frosty atmosphere, by means of which it is duplicated, and accompanied by halos or great circles of light.

Sun-Spots—Supposed to be irregular openings in the outer, light-giving covering of the sun, like a break in our own cloudy sky, showing us the dark body of the sun below it.

Sphere—The concave vault, or expanse, which surrounds all portions of our earth, and in which the stars and planets appear to the eye to be placed nearly equidistant from us

Taurus (the Bull)—A constellation of the northern hemisphere, representing the head and shoulders of a furious bull, and is the second sign of the zodiac, Aries, the Ram, being first. It is found between Perseus and the Charioteer on the north, the Twins on the east, and Orion and the River Po on the west. It contains 141 visible stars, including the two beautiful clusters of the Pleiades and Hyades, the first on the shoulder and the latter in the face of the Bull. See PLEIADES.

Tides—The regular periodical current of water, which, when it rises, is called the flow, and when it goes back is the ebb. Newton attributed this phenomenon to the influence, principally, of the moon, and also of the sun in a less degree. Plummer says that the waters of the ocean vertically below the moon experience an attraction, heaping them up below the nocturnal planet, and a similar wave on the opposite side of the globe, and that these waves follow the diurnal motion of the moon about the earth. The sun, also, causes a similar but smaller wave on both sides of the globe. When the combined influences of the sun and moon cause two waves at the same time, it is called a "spring tide." The height of the solar tide is to the height of the lunar tide as two to five, when the moon is in her first and second quarters. The tides are lowest (called "neap tides") because then the planet is farthest from the earth. The general theory of the tides is this, that when the moon is nearest to the earth, her attraction is strongest and the tidal waves are highest, but when she is farthest from the globe the tides are lowest.

Transit—The passage of any planet just over or by a fixed star or the sun's disk, particularly the transit of Venus and Mercury, which always greatly interests astronomers.

Twilight—By the atmospheric refraction of the rays of the sun its light is reflected upon the earth before its rising and after its setting. "In the morning, when the sun has arrived at eighteen degrees below the horizon, his rays pass over our heads into the higher region of the atmosphere, and are thence reflected or, as it were, bent down to the earth. The day is then said to *dawn*, and the light gradually increases until the sun appears above the horizon; this is called morning twilight, or aurora. In the evening, after sunset, the rays of the sun continue to illuminate the atmosphere till he sinks eighteen degrees below the horizon, and a similar effect, called the evening twilight, is produced." (*Burritt.*)

Time—A certain measure or portion of eternity—"a strip of time between two eternities"—graduated by the motions of the heavenly bodies. "Apparent time" is that reckoned by the sun, so that the sun's center passes over the meridian at precisely 12 o'clock (noon). "Mean time" is that indicated by a perfect clock, rightly adjusted, which slightly differs from the sun or apparent time.

Ursa Major (the Great Bear)—An important constellation in the northern hemisphere, containing eighty-seven visible stars, of which one is of the first magnitude and three of the second. It is situated between the Little Bear on the north and the Little Lion on the south, and is one of the most conspicuous and noted in this hemisphere. Among its remarkable features is the cluster of seven stars familiarly known as the "dipper," the "plow," or "Charles' Wain." Although there is no resemblance whatever to a bear or other animal, it is stated that both the remote American Indian tribe of Iroquois and the earliest Arabs in Asia, probably without having ever communicated with each other, gave this constellation the name of "Great Bear."

Ursa Minor (the Little Bear)—Another constellation of the northern hemisphere, containing twenty-four stars, of which the seven principal ones form a figure resembling that in the Great Bear, only the "dipper" is reversed and about half as large as the one noticed above. The first star in its handle is the present polar star, and the others revolve constantly about it. All the stars in the group, being situated near the pole of the heavens, seem to move very slowly around it in circles so small that they never sink below the horizon. (See POLAR STAR)

Vertical—Pertaining to the zenith—as planets are vertical when directly overhead

Vertex—Another term for the zenith—the top of a perpendicular line

Virgo (the Virgin)—The sixth sign of the zodiac, and a constellation situated next east of the Lion and about halfway between Berenice's Hair on the north and the Crow on the south. It covers a large field in space, and contains 110 stars, including only one of the first magnitude. (*Flamstead.*)

Vesta—One of the asteroidal planets in our solar system, discovered by Dr. Olbers of Bremen, March 29, 1807, in the constellation of the Virgin. It appears like a star of the fifth or sixth magnitude, shining with a steady radiance, and can be seen with the naked eye. Its orbit is so eccentric that it is sometimes farther from the sun than either Ceres, Pallas, or Juno, although its average distance is many millions of miles less than theirs. Its orbit crosses those of all three in two opposite points.

Vulcan—A planet discovered in 1859, situated between Mercury and the sun. According to Professor Tice's estimate, it is as large as Uranus, having a diameter of 33,000 miles. It was re-discovered by Professor Watson, at Rawlins, Kas.

Winter—That season of the year when, in the northern hemisphere, the sun is in the tropic of Capricorn, and at his greatest declination from the equator; known as the coldest portion of the year in countries north of the equator.

Zenith—The vertical point of the heavens, ninety degrees distant from the horizon.

Zodiac—A zone, or girdle, about sixteen degrees in breath, extending quite around the heavens, and including all the heavenly bodies within eight degrees on each side of the ecliptic. It includes, also, the orbits of all the planets, except some of the asteroids, since they are never seen beyond eight degrees either north or south of the ecliptic. (*Burritt.*) It has also twelve constellations within its bounds, which are called the twelve signs of the zodiac. See SIGNS, and ECLIPTIC.

Zone—A division of the earth's surface, of which there are five, distinguished according to the degree of heat to which each part is exposed, into two temperate, two frigid, and one torrid zone, the latter being central.

Jessie A. Fowler,
Practical Consulting Phrenologist and Lecturer.

Phrenology AND Some of its Teachers

From 1758 to 1895.

Lydia F. Fowler, M.D.,
Physician, Phrenologist and Lecturer.

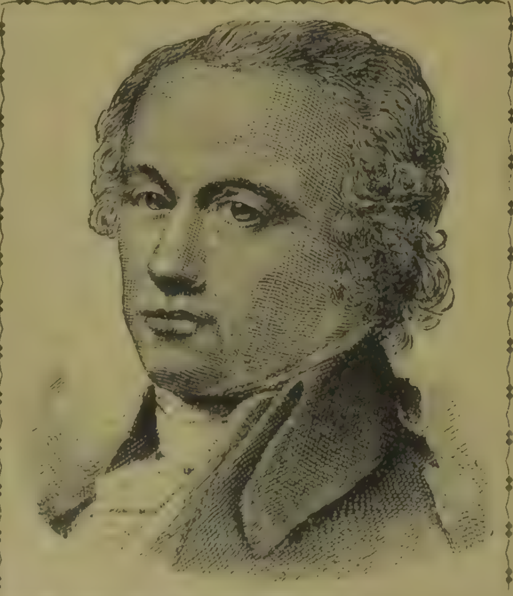
Dr. Gall.

TO DISCOVER the several faculties of the mind was the work of Joseph François Gall, who was born at Tiefenbrun, in Baden, March 9th, 1758, and died at Montrouge, near Paris, August 22nd, 1828.

Dr. Gall had pursued his literary studies at Baden, had studied anatomy and natural history at Strasburg, and afterwards received his diploma as a Physician at Vienna.

From boyhood he had observed the difference of talents displayed by his companions, and particularly had he noticed that all those students who excelled in committing to memory had prominent eyes. Commencing with the idea that individual talents could be determined by certain outward manifestations, he continued the study, visiting lunatic asylums, prisons, universities of learning, and other places where certain grades of character could be found, until he had determined that all the manifestations of the mind had their seat in the brain instead of in the heart as had been before supposed.

After about twenty years of study he decided the location of some twenty of the different organs of the brain, and satisfied himself that the activity of these could be determined by the development of the various regions of the head. In accord with this discovery he published a general medical work in 1791, and began lecturing on the subject in 1796 at Vienna, where the novelty of the theory created a marked sensation; and in 1798 he published his first exposition on Phrenology.



François Joseph Gall, M.D.,
Distinguished Phrenologist, who first discovered and designated the Phrenological Organs.

Dr. Spurzheim.

Johann Gaspar Spurzheim, M.D., was born at Longuich, Germany, December 31st, 1776, and died in Boston, America, November 10th, 1832. He espoused the theory of Dr. Gall and did much to popularize its doctrine by lectures and private classes, first in company with Gall, afterwards throughout England, Scotland, Ireland, and America. He was the first Professor to lecture on the subject in England.

George Combe.

It was during the visit of Dr. Spurzheim to Scotland in 1816 that George Combe, who was born in Edinburgh, October 24th, 1788, first became interested in the subject of Phrenology. Subsequently he published "Essays on Phrenology," "Constitution of Man," and other works on the subject, and with his brother, Dr. Andrew Combe, established *The Edinburgh Phrenological Journal*, and contributed to it for twenty-three years. He travelled in England, and in 1838 visited the United States in company with his wife. He died in 1858, at Moor Park, in England.

O. S. Fowler.

Orson Squire Fowler was born at Cohocton, N.Y., America, October 11th, 1809, and died in Steuben Co., August 18th, 1887. He travelled extensively and wrote voluminously in connection with his brother, L. N. Fowler, until 1860. The last work, called "Life," upon which he was engaged, was a compilation of all his works, the first volume of which he completed.

L. N. Fowler.

The veteran Phrenologist, Lorenzo Niles Fowler, became interested in Phrenology during Dr. Spurzheim's visit to America in 1832, and after graduating at Amherst College, he commenced lecturing on the subject throughout the United States and Canada. He was born at Cohocton, N.Y., on June 23rd, 1811, and is therefore in his eighty-fifth year (1895). In 1835 he opened an office in New York City in company with his brother, Orson Squire, and jointly they published "Phrenology Proved" in 1836, and in 1838 issued the first volume of *The American Phrenological Journal*. In 1860 he came to England accompanied by his wife and Mr. S. R. Wells, and continued to lecture throughout the British Isles until 1893. For thirteen years he lectured for ten months in the year, and six nights in the week. In 1873 he settled permanently in his London office, and he has revisited his native country on several occasions. He has delivered and written for magazines 500 terse and spicy lectures, and since 1860 has published "Lectures on Man," "Memory," "Marriage," "The Phrenological Register," "How to Learn Phrenology," "Synopsis of Phrenology," "The Phrenological Dictionary," and since 1880 he has issued a Monthly Phrenological Magazine, and a beautiful china bust which contains all the recently discovered mental faculties and their divisions, besides publishing several Health journals.

L. N. Fowler and Grandson, Lorenzo Franklin Fowler Piercy, 1893.

In 1890 he founded the Fowler Institute, in order to promulgate the science of Phrenology in a thoroughly practical and scientific way. It is the only Institute that gives thorough instruction in the theory and practice of Phrenology, and grants certificates and diplomas to students who have passed stiff examinations.

Mrs. Lydia F. Fowler, M.D.,

was born in Nantucket, U.S.A., a direct descendant from Benjamin Franklin through her mother. She took her medical degree in Rochester, after she was married, and then commenced to practice in New York City. She lectured to women on Phrenology, Temperance and Hygiene, and accompanied her husband to England in 1860. She went to Paris to the Medical College which was just opened to women and took her second medical degree, and after her return to London walked Queen Charlotte's Hospital for three months. She wrote not only lectures to women and children called "The Pet of the Household," but also "Phrenology for the Schools," and "Astronomy for the Schools," and "Nora, the Lost

[*continued on page* 124]

Physiognomy.

People instinctively judge of the mental ability of the persons whom they see. No one could fail to determine in his own mind the intellectual capacity of the different heads as shown in Fig. 1, entitled "Varying Grades of Intelligence." While the profile of the extreme right, with thick lips, sloping chin and forehead, bears the evidence of small intellect, the face at the left we readily discover to be the possessor of vigorous mind and strong intellectual power. We judge these faces by the shape of head, the nose, the chin, and the lips; by the texture of the hair, the brilliancy of the eye, the colour of the skin and the changing expression of the face as we converse with the individual.

Two Faces.

Again, we quickly determine the mental status of the two faces, Figs. 2 and 3. In Fig. 2 are shown all the evidences of vulgarity and ignorance—a face that no amount of training could make into anything but a low order of human being. On the contrary, in Fig. 3 we see a face that exhibits certain well-defined characteristics which are evidences of superior mental endowment. Examination shows an eye sharp and brilliant, a nose that indicates character, a forehead that shows a well-defined perceptive talent, and a mouth and chin that reveal decision of purpose.

While the first would be a menial, we at once recognize the fact that the latter is a face full of culture, refinement and power.

Three faces and heads are placed before us, differing in shape and expression. In the one, Fig. 4, we see the scowl and the wrinkles, which indicate fear and anxiety. This individual, fearful that he may come to want, and thinking only of himself, hoards his money and ignores the wants and sufferings of others.

Another face, Fig. 5, stands out in contrast with this: a face beaming with a genial and pleasant expression. We intuitively recognize this man as good and kind. With a kindly regard for the wants of all, he is particularly distinguished for his benevolence.

A third face, Fig. 6, is in the group. No one would accuse the possessor of this face of being miserly, and no one would attribute to him any benevolence. In short, his appearance indicates only a disposition to gratify his lower appetites. Such we judge him and such is a fact.

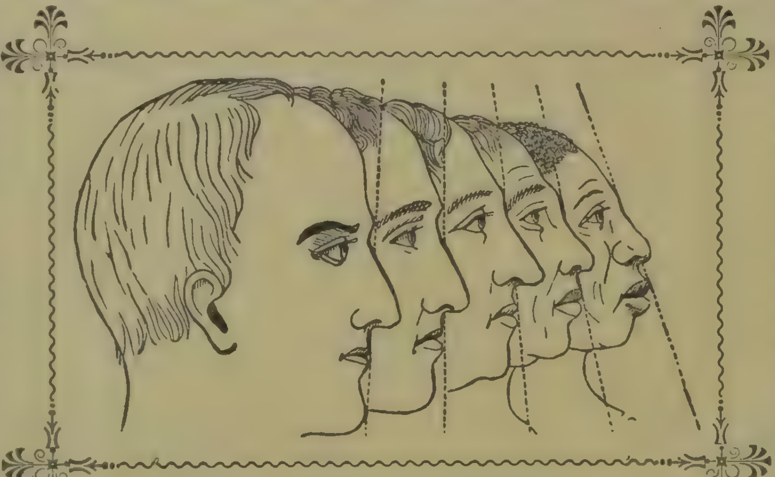


Fig. 1--Varying Grades of Intelligence.

Divisions of the Brain.

The steps will be readily perceived which led up to the classification of the different organs of the mind. Thus, in Fig. 7, we have lines drawn which clearly define the difference in the shape of heads.

The line drawn from *c* to *d* divides the brain into two portions, the one below being called the basilar and the one above the coronal. Observation proved that if the brain above this line was larger than that below, then the moral and intellectual sentiments would have the ascendancy. If, on the contrary, the brain lay mostly below this line, then the animal nature would predominate.

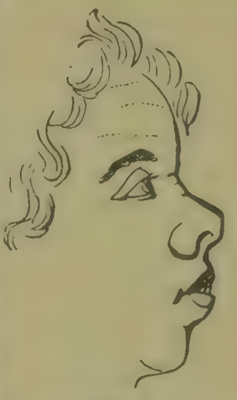


Fig. 2.

Coarse, Vulgar, Brutal and Ignorant.

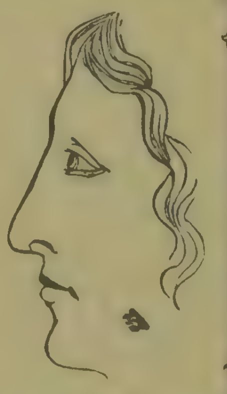


Fig. 3.

Bright, Intelligent and Educated.

Figs. 7 and 8 reveal two distinct types of faces often seen, the peculiarities of which are as different as are the shapes of the faces. Thus, while in Fig. 8 there is large perceptive power shown by the protuberance above the eyes, the reflective faculties and the moral are so wanting as to show depression at *i*. In such a head as this the discoverers of phrenology found the moral and reflective faculties lacking, and the lower nature in control of the individual. The sharp, perceptive faculty would make the individual keen and active, but in cases of emergency the man could not be relied upon implicitly for steadiness of moral purpose.

In Fig. 7 it was found there was so much of the brain in front of *a* and *b* which gave intellectual power, and so much above *d* and *c* which gave moral strength, that the man possessing such a head could be depended upon as a person of moral integrity, however adverse might be the circumstances about the individual.

A long series of examinations and experiments convinced Gall that there were seven prominent divisions of the brain which might be mapped out as shown in Fig. 9; that the upper part pertained to the spiritual, the front to the intellectual, and the lower part behind the ears related to the propensities.

Further study convinced him also that each division, provided it was developed in harmony and balanced with the others, was essential to man's progress and happiness; that the animal propensities were necessary to the procreation of the species, and that they cared for self and gave force of character; that the intellectual enabled the individual to grapple with the difficulties of life, while the moral nature guided into the higher and better ways.

For general convenience the phrenologist divides the brain into three distinct compartments, as shown in Fig. 10.

What Phrenology Has Taught.

The advocates of phrenology do not claim that it is yet complete as a science, but they affirm that they have demonstrated beyond question that the brain is the organ through which the mind manifests itself, and that each faculty of the mind has a separate and distinct organ in the brain; that the organs relating to each other are grouped together in the brain as shown in the moral faculties, the propensities, etc.; that other things being equal, the power of the brain may be estimated by its size; that the manifestations of brain are affected by the bodily conditions; that every faculty of the mind is devised for a good purpose, but may be perverted, and every faculty may be cultivated and enlarged by exercise, or may be lessened by neglect.

Most phrenologists and physiognomists claim also that character can be determined by many evidences existing outside the contour of the head.

After showing the conformation of the head, they note the features of the face, the color of the hair and eyes, the complexion of the skin, the shape of mouth, nose and face, brilliancy of the eyes, arch of the eyebrows and nose, fineness of the hair, length and size of neck, breadth of chest, strength of lungs, size of body, shape of feet and hands.

Even beyond and outside all these physical characteristics, it is claimed that the mental peculiarities of the individual can be seen and known in the tone of voice, the rapidity of speech, the sprightliness of motion, the firmness of step, the heartiness of a laugh, and the grasp of the hand.

Temperaments.

It is a well-known fact that many men with large heads do not accomplish as much as others who have heads and bodies of much less size. This fact is cited as one of the objections to the claim that mental ability can be determined by the size of the brain.

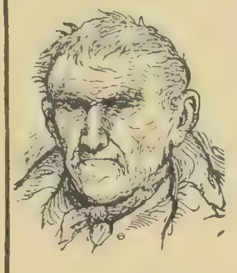


Fig. 4---Miserly.

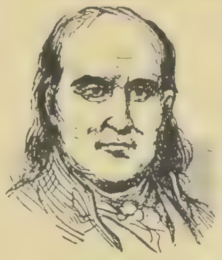


Fig. 5---Benevolent.

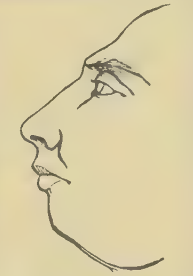


Fig. 6---Idiotic.

The phrenologist answers by saying that there are four temperaments, called the lymphatic, the sanguine, the bilious and the nervous; that every person possesses more or less of these in his physical constitution; that the lymphatic temperament is indicated by the predominance of stomach, which makes roundness of form, softness of flesh, a weak pulse, and a languid condition of the system. With such the hair is light, complexion pale, eyes blue and dull.

The sanguine temperament largely depends upon a preponderance of the arterial system. The person possessing it will have light hair and blue eyes, will be fairly rounded in muscle, will be ardent, active, enthusiastic, impressible, and will possess much greater energy than the person who is under the control of the lymphatic.

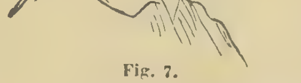


Fig. 7.

Reflectives (large).

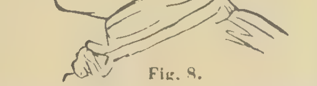


Fig. 8.

Perceptives (large).

With the bilious temperament the liver is taken as the basis. This temperament is indicated by black eyes and hair, a dark and tawny skin, solid and spare flesh, angular form, great energy, activity, and, if coupled with superior mental development, large power.

The nervous temperament rests upon a preponderance of the nervous system. Those possessing it are known by their delicacy of health, thin and angular features, light, thin hair, rapid movements, keenly sensitive natures, and mental activity.

These temperaments are, fortunately, generally found blended more or less with each other, and out of the combination the phrenologists designate another class of temperaments called the *motive*, the *vital*, and the *mental*.

The persons possessing the motive temperament in a large degree will be known by large, angular frames, prominent features, hair abundant, strong, and usually dark: are active, robust, energetic, capable of endurance, and are noted for executive force. If possessed of a high order of brain, the person will be an intellectual power. If deficient in mental capacity, the person will be noted for brute force.

The vital temperament is shown in the full chest, the rounded form, fondness for outdoor exercise, debate, and sport. Those who possess this temperament are good livers, liable to excesses in eating and drinking, and naturally genial, but are liable to be passionate, and are prone to go to extremes, though not always so if the temperament is balanced by a good organization.

The mental temperament gives its possessor a slight frame, a large forehead, light, soft hair, clear-cut features, a graceful figure, refinement, love of the artistic and beautiful, sensitiveness, and keen emotions.

Quality of Brain.

The phrenologist rests his case also on other conditions, without which, he admits, we cannot determine the mental power of the individual. Among these are quality of the brain, which is indicated by the muscles of the body; that a loose and flabby flesh reveals a soft and spongy brain; that a close-knit frame, firm flesh, and favorable temperaments, show a compact brain and correspondingly strong intellectual power.

Added to this must be taken into account the state of the health of the individual. If in perfect health, the brain will be strong in proportion. If in ill-health, the manifestations of brain will be weak.

To give the brain ample opportunity for a full display of its power, there must be lungs sufficiently large to take in a full supply of air with which to vivify the blood, which blood must have a full and free circulation without the least restraint.

The powers of digestion must also be in perfect condition, aided by a sufficiency of exercise, which will each day produce a perspiration through the pores of the skin, the pores being kept open by a daily application of moisture, and rubbing.

The mind should be free from undue excitement, the sleep should be all that the individual requires, the occupation should be congenial, the associates agreeable, and all the habits of the individual should be temperate.

When these conditions are fully understood, the power of the brain may be readily estimated, and the mental ability and character of the individual may be told by the form of the person, the shape of the face, and the contour of the head.

THE PHRENOLOGICAL ORGANS.

Step by step the advocates and students of phrenology have discovered and determined the location of some forty-two of the distinct divisions of the human mind, of which number Dr. Gall definitely located twenty

The different organs of the brain, as they have been finally classified, located and numbered, are shown in Fig. 11, a brief synopsis of which numbers are shown herewith. For a fuller description of these, see other pages.

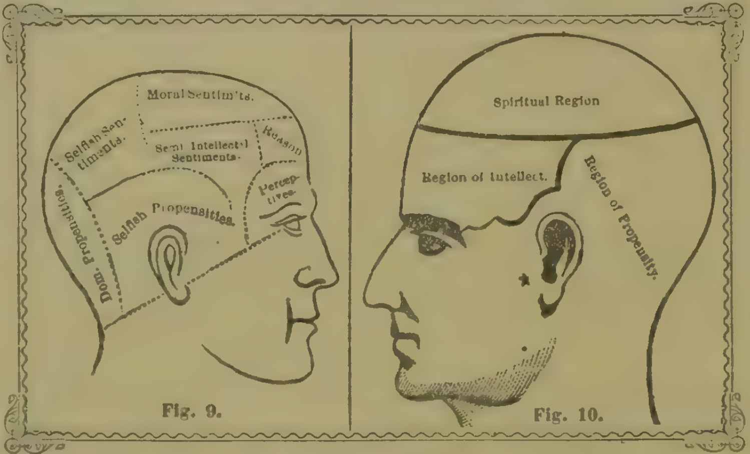


Fig. 9. Fig. 10.

The Subdivisions of the Brain,
And the General Grouping of the Phrenological Organs.

Definition of the Organs.

1. **Amativeness**, Love between the sexes—desire to marry.

A **Conjugality**, Matrimony—love of one—union for life

2. **Parental Love**, Regard for offspring, pets, etc

3. **Friendship**, Adhesiveness — sociability — love of society

4. **Inhabitiveness**, Love of home and country.

5. **Continuity**, One thing at a time—consecutiveness

E. **Vitativeness**, Love and tenacity of life—dread of annihilation.

6. **Combativeness**, Resistance—defense—courage—opposition.

7. **Destructiveness**, Executiveness—force—energy

8. **Alimentiveness**, Appetite—hunger—love of eating.

9. **Acquisitiveness**, Accumulation—frugality—economy.

10. **Secretiveness**, Discretion—reserve—policy—management.

11. **Cautiousness**, Prudence — provision — watchfulness

12. **Approbativeness**, Ambition—display—love of praise.

13. **Self-Esteem**, Self-respect—independence—dignity

14. **Firmness**, Decision—perseverance—stability —tenacity of will.

15. **Conscientiousness**, Integrity—love of right—justice—equity.

16. **Hope**, Expectation—enterprise—anticipation.

17. **Spirituality**, Intuition — faith — "light within"—credulity.

18. **Veneration**, Reverence for sacred things — devotion — respect.

19 **Benevolence**, Kindness — goodness — sympathy — philanthropy.

20. **Constructiveness**, Mechanical ingenuity—sleight of hand.

21 **Ideality**, Refinement —love of beauty—taste—purity.

B. **Sublimity**, Love of grandeur—infinitude—the endless.

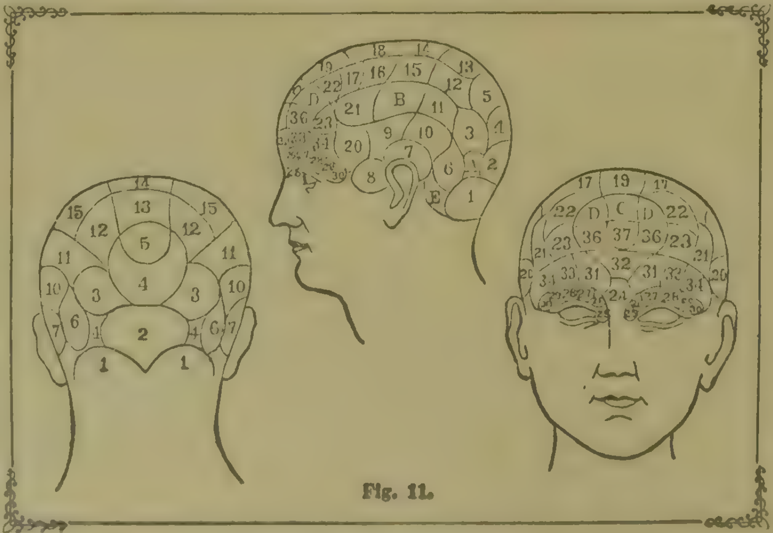


Fig. 11.

Location of Phrenological Organs.

Definition of the Organs.

22. **Imitation**, Copying—patterning—mimicry—following examples.

23. **Mirthfulness**, Perception of the absurd—jocoseness—wit—fun.

24. **Individuality**, Observation—desire to see and examine.

25. **Form**, Recollection of shape—memory of persons and faces

26. **Size**, Cognizance of magnitude—measuring by the eye.

27. **Weight**, Balancing—climbing—perception of the law of gravity.

28. **Color**, Perception and judgment of colors, and love of them.

29. **Order**, Perception and love of method—system—arrangement.

30. **Calculation**, Cognizance of numbers—mental arithmetic.

31. **Locality**, Recollections of places and scenery.

32. **Eventuality**, Memory of facts and circumstances.

33. **Time**, Cognizance of duration and succession of time—punctuality.

34. **Tune**, Sense of harmony and melody—love of music

35. **Language**, Expression of ideas—memory of words.

36. **Causality**, Applying causes to effect—originality.

37. **Comparison**, Inductive reasoning—analysis—illustration.

C. **Human Nature**, Perception of character and motives.

D. **Agreeableness**, Pleasantness—suavity—persuasiveness.

The student in the study of phrenology is much assisted by the phrenological bust which shows a well-balanced head, with all the organs located and distinctly marked. The best school, however, for the acquisition of a practical knowledge of the subject is to study the characteristics of various people.

DESCRIPTION OF THE DIFFERENT ORGANS OF THE BRAIN.

The exact location of the different organs of the brain are quite fully shown in Fig. 12, accompanying which is the following description of the organs as determined from their size, taken from the "Self-Instructor in Phrenology," published by Fowler & Wells, New York. It may be remarked also that this description, which is greatly condensed, does not do the subject justice. It is only by a study of all the organs in combination that we may understand the mental characteristics. The "Self-Instructor" and the larger phrenological works very fully explain all this.

1. AMATIVENESS.

Conjugal love; attachment to the opposite sex, desire to love, be loved, and marry; adapted to perpetuate the race. It causes those mutual attractions which exist between the sexes; creates love; induces marriage; eventuates in offspring; renders woman winning, persuasive, urbane, affectionate, loving, and lovely, and develops all the feminine charms and graces; makes man noble in feeling and bearing; elevated in aspiration; tender and bland in manner; affectionate toward woman; pure in feeling; highly susceptible to female charms, and clothes him with that dignity, power, and persuasiveness, which accompanies the masculine. Perverted, it occasions a grossness and vulgarity in expression and action; licentiousness in all its forms; a feverish state of mind, and depraves all the other propensities; treats the other sex merely as a minister to passion, now caressing, and now abusing them, and renders the love-feeling every way gross, animal, and depraved.

Large—Is strongly attracted toward the opposite sex; admires and loves their beauty and excellent qualities; easily wins their affectionate regard, or kindles their love; has many warm friends, if not admirers, among them; loves young and powerfully, and wields a potent influence for good or evil over the destinies of its subject, according as it is well or ill placed.

Average—Is capable of fair sexual attachments and conjugal love, provided it is properly placed and fully called out; experiences a greater or less degree of love in proportion to its activity; renders the son quite attached to mother and sisters, and fond of female society, and endowed with a fair share of masculine element, yet not remarkable for its perfection; makes woman quite winning and attractive, yet not particularly susceptible to love; renders the daughter fond of father and brothers, and desirous of the society of men, yet not extremely so, and capable of a fair share of conjugal devotedness under favorable circumstances.

Small—Feels little conjugal or sexual love and desire to marry; is cold, coy, distant, and reserved toward the other sex; experiences but little of the beautifying and elevating influence of love, and should not marry, because incapable of appreciating its relation and making a companion happy.

2. PHILOPROGENITIVENESS.

Parental love; attachment to one's own offspring; love of children, pets, and animals generally, especially those young or small; adapted to that infantile condition in which man enters the world, and to children's need of parental care and education. This faculty renders children the richest treasure of their parents; casts into the shade all the toil and expense they cause, and lacerates them with bitter pangs when death or distance tears them asunder. It is much larger in woman than in man, and nature requires mothers to take the principal care of infants. Perverted, it spoils children by excessive fondness, pampering, and humoring.

Large—Loves its own children devotedly, values them above all price, cheerfully endures toil and watching for their sake, forbears with their faults, wins their love, delights to play with them, and cheerfully sacrifices to promote their interest.

Average—Loves its own children tolerably well, yet cares but little for those of others.

Small—Cares little for its own children, and still less for those of others.

3. ADHESIVENESS.

Friendship; social feeling; love of society, desire to congregate, associate, visit, seek company, entertain friends, form and reciprocate attachments, and indulge friendly feelings. When perverted, it forms attachments for the low, vulgar, or vicious, and leads to bad company Adapted to man's requisition for concert of action, copartnership, combination, and community of feeling and interest, and is a leading element of his social relations

Large—Is a warm, cordial, ardent friend; readily forms friendships, and attracts friendly regard in return; must have society of some kind.

Average—Is capable of tolerably strong friendships, yet their character is determined by the larger faculties; enjoys present friends, yet sustains their absence.

Small—Thinks and cares little for friends; dislikes copartnership, is cold-hearted, unsocial, and selfish; takes little delight in company, but prefers to be alone; has few friends, and, with large selfish faculties, many enemies, and manifests too little of this faculty to exert a perceptible influence upon character

A. UNION FOR LIFE.

Attachment to one, and but one conjugal partner for life. Adapted to the pairing principle in man and animals, and is located between Adhesiveness and Amativeness. Some birds, such as geese, eagles, robins, etc., pair for life, and remain true to their connubial attachment; while hens, turkies, sheep, horses, and neat cattle, associate promiscuously, which shows that it is a faculty distinct from Amativeness and Adhesiveness.

Large—Seeks one, and but one sexual mate; experiences the keenest disappointment when love is interrupted; is perfectly satisfied with the society of that one, and can truly love no other, and retains that love even after its object is dead; may love and marry another, but it will be more from motives of policy than pure conjugal union; and should exert every faculty to win the heart and hand of the one beloved, nor allow anything to alienate their affections, because certain ruin to mind and body is consequent thereon.

Average—Is disposed to love but one for life, yet is capable of changing its object

Small—Cares but little for first love, and seeks the promiscuous society and affection of the opposite sex, rather than a single partner for life.

4. INHABITIVENESS.

The home feeling; love of house, the place where one was born or has lived, and of home associations. Adapted to man's need of an abiding place, in which to exercise the family feelings; patriotism. Perversion — homesickness when away from home

Large—Has a strong desire to locate young, to have a home or room exclusively to itself; leaves home with great reluctance, and returns with extreme delight; soon becomes attached to house, sleeping-room, garden, fields, furniture,

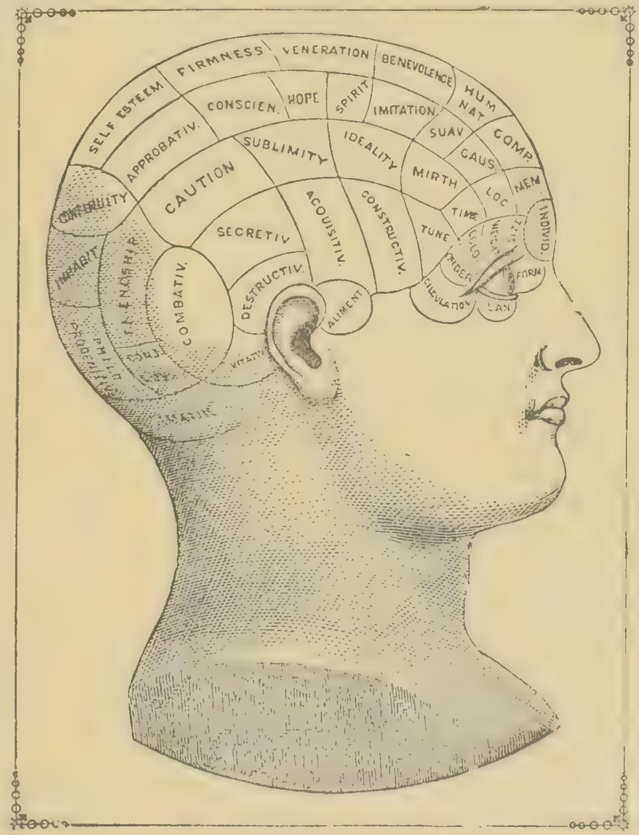


Fig. 12--The Human Head,
And the Location of the Various Organs of Mind.

etc.; and highly prizes domestic associations, nor is satisfied till it has a place on which to expend this home instinct.

Average—Loves home tolerably well, yet with no great fervor, and changes the place of abode as the other faculties may dictate; takes no great interest in house or place, as such, or pleasure in their improvement, and is satisfied with ordinary home comforts.

Small—Cares little for home, leaves it without much regret, contemplates it with little delight, takes little pains in its improvement, and, with Acquisitiveness large, spends reluctantly for its improvement.

5. CONTINUITY.

A patient dwelling upon one thing till it is finished, consecutiveness and connectedness of thought and feeling. Adapted to man's need of doing one thing at a time. Perversion—prolixity, repetition, and excessive amplification.

Large—Gives the whole mind to the one thing in hand till it is finished; completes as it goes; keeps up one common train of thought, or current of feeling, for a long time; is disconcerted if attention is directed to a second object, and cannot duly consider another

Average—Can dwell upon things, or divert attention to others, as occasion requires; is not confused by interruption, yet prefers one thing at a time.

Small—With activity great, commences many things, yet finishes few; craves novelty and variety; puts many irons into the fire; lacks application; jumps rapidly from premise to conclusion, and fails to connect and carry out ideas; is a creature of impulse; lacks steadiness and consistency of character; may be brilliant, yet cannot be profound; humming-bird like, flies rapidly from thing to thing, but does not stay long; has many good thoughts, yet they are scattered; and talks on a great variety of subjects in a short time, but fails sadly in consecutiveness of feeling, thought, and action.

A. VITATIVENESS.

Tenacity of life, resistance to death, love of existence as such, dreads annihilation, loves life, and clings tenaciously to it for its own sake.

Large—Struggles resolutely through fits of sickness, and will not give up to die till it is absolutely compelled to do so.

Average—Enjoys life, and clings to it with a fair degree of earnestness, yet by no means with passionate fondness.

Small—Likes to live, yet cares little about existence for its own sake.

6. COMBATIVENESS.

Resistance, opposition, defense, defiance, boldness, courage, resentment, spirit, willingness to encounter, self-protection, presence of mind, determination, get-out-of-my-way, let-me-and-mine-alone: adapted to man's requisition for overcoming obstacles, contending for rights, etc. Perversion—anger, contrariety, fault-finding, contention, ill-nature, and fighting

Large—Imparts a bold, resolute, fearless, determined spirit; disposes to grapple with and remove obstacles, and drives whatever it undertakes; loves debate and opposition; gives great coolness, intrepidity and presence of mind in time of danger, and nerves one for encounter.

Average—Evinces the combative spirit according to circumstances; when vigorously opposed, or when any of the other faculties work in conjunction with Combativeness, shows a good degree of the opposing, energetic spirit; but, when any of the other faculties, such as large Cautiousness or Approbativeness work against it, it evinces irresolution, and even cowardice

Small—Is inefficient, can accomplish little, never feels its own strength, and with large moral and intellectual organs, is too gentle and easily satisfied.

7. DESTRUCTIVENESS.

Executiveness, severity, sternness, the destroying and pain-causing faculty, harshness, extermination, indignation, disposition to break, crush, and tear down, the walk-right-through spirit, adapted to man's destroying whatever is prejudicial to his happiness; performing and enduring surgical operations, undergoing pain, etc. Perversion—wrath, revenge, malice, disposition to murder, etc.

Large—Imparts that determination, energy, and force which removes or destroys whatever impedes its progression.

Average—Manifests itself in a similar manner as when full, due allowance being made for diminished power.

Small—With large moral faculties, possesses too tender a soul to enjoy our world as it is, or to endure hardships or cruelties.

8. ALIMENTIVENESS.

Appetite, the feeding instinct, relish for food, hunger, adapted to man's need of food, and creating a disposition to eat. Perverted, it produces gormandizing and gluttony, and ends in dyspepsia and all its evils.

Large—Has a hearty relish for food, sets a high value upon table enjoyments, and solid, hearty food.

Average—Enjoys food well, and eats with a fair relish; yet rarely over-eats except when rendered craving by dyspeptic complaints.

Small—Eats with long teeth, and little relish; hardly knows or cares what or when he eats, and should pay more attention to duly feeding the body.

9. ACQUISITIVENESS.

Economy; frugality; the acquiring, saving, and hoarding instinct; laying up of surplus, and allowing nothing to be wasted; desire to possess and own; the mine and thine feeling; claiming of one's own things; love of trading and amassing property. Adapted to man's need of laying up the necessaries and comforts of life against a time of future need. Perversion—a miserly, grasping, close-fisted penuriousness.

Large—Saves for future use what is not wanted for present; allows nothing to go to waste; turns every thing to a good account; buys closely, and makes the most of all it gets; is industrious, economical, and vigorously employs means to accumulate property and desires to own and possess much.

Average—Loves property; yet the other faculties spend quite as fast as this faculty accumulates.

Small—Holds money loosely; spends it often without getting its full value; cares little how his money goes.

10. SECRETIVENESS.

Self-government, ability to restrain feelings, policy, management, reserve, evasion, discretion, cunning. Adapted to man's requisition for controlling his animal nature. Perverted, it causes duplicity, double-dealing, lying, deception, and all kinds of false pretensions.

Large—Throws a veil over the countenance, expression, and conduct; appears to aim at one thing while accomplishing another; loves to surprise others; is enigmatical, mysterious, guarded, foxy, politic, shrewd, managing, employs humbug, and is hard to be found out.

Average—Maintains a good share of self-government, except when under excitement, and then lets the whole mind out fully

Small—Is perfectly transparent; seems to be just what, and all that, it really is, disdains concealment in all its forms; is no hypocrite, but passive and unequivocal in all it says or does.

11. CAUTIOUSNESS.

Carefulness, watchfulness, prudence, provision against want and danger, solicitude, anxiety, apprehension, security, protection, avoiding prospective evils, the sentinel. Adapted to those dangers which surround us, and those provisions necessary for our future happiness. Perversion—irresolution, timidity, procrastination, indecision.

Large—Is always on the look-out; takes ample time to get ready; provides against prospective dangers; makes every thing safe; guards against losses and evils; incurs no risk; sure binds that it may sure find; with large Combativeness, Hope, and an active temperament, drives, Jehu-like, whatever is undertaken, yet drives cautiously.

Average—Has a good share of prudence, whenever this faculty works in connection with the larger organs, yet evinces but little in the direction of the smaller organs

Small—Is rash, reckless, luckless; and with large Hope, always in trouble; with large Combativeness, plunges headlong into difficulties in full sight, and should assiduously cultivate this faculty

12. APPROBATIVENESS.

Desire to be esteemed, regard for character, appearance, etc.; love of praise, desire to excel, ambition, affability, politeness, desire to display and show off, sense of honor, desire for a good name, for notoriety, fame, eminence, distinction, and to be thought well off, pride of character, sensitiveness to the speeches of people, and love of popularity. Adapted to the reputable and disgraceful. Perversion—vanity, affectation, ceremoniousness, aristocracy, pomposity; eagerness for popularity, outside display, etc.

Large—Loves commendation, and is cut by censure; is keenly alive to the smiles of public opinion; minds what people say; strives to show off to advantage, and is affable, courteous, and desirous of pleasing; loves to be in company, stands on etiquette and ceremony; aspires to do and become something great; sets much by appearances, and is mortified by reproach; with large Cautiousness and moderate Self-Esteem is careful to take the popular side, and fears to face the ridicule of others; yet with Conscience and Combativeness large, sticks to the right, though it is unpopular, knowing that it will ultimately confer honor

Average—Evinces only a respectable share of this faculty, except when it is powerfully wrought upon by praise or reproach.

Small—Cares little for the opinion of others, even of friends; is comparatively insensible to praise; disregards style and fashion; despises etiquette and formal usages; never asks what will persons think, and puts on no outside appearance for their own sake; with large Self-Esteem, Firmness, and Combativeness, is destitute of politeness, devoid of ceremony, and not at all flexible or pleasing in manner; with large Combativeness and Conscientiousness, goes for the right regardless of popularity, and is always making enemies.

13. SELF-ESTEEM.

Self-appreciation and valuation, self-respect and reliance, magnanimity, nobleness, independence, dignity, self-satisfaction and complacency; love of liberty and power, an aspiring, self-elevating, ruling instinct, pride of character, manliness, lofty-mindedness, and desire for elevation. Adapted to the superiority, greatness, and exalted dignity of human nature. Perversion—haughtiness, forwardness, over-bearing, tyranny, egotism, and superciliousness.

Large—Puts a high estimate upon itself, its sayings, doings, and capabilities; falls back upon its own unaided resources; will not take advice, but insists upon being its own master; is high-minded; will never stoop or demean itself; aims high; is not satisfied with moderate success, or a petty business, and comports and expresses itself with dignity, and perhaps with majesty, and is perfectly self-satisfied.

Average—Shows this faculty mainly in combination with those that are larger.

Small—Feels diminutive in its own eyes; lacks elevation and dignity of tone and manner; places a low estimate on self; and, with Approbativeness large, is more anxious to appear well in the eyes of others than in its own.

14. FIRMNESS.

Stability, decision, perseverance, fixedness of purpose, tenacity of will, and aversion to change. Adapted to man's requisition for holding out to the end. Perversion—obstinacy, willfulness, mulishness, stubbornness, unwillingness to change, even though reason requires.

Large — Is set in its own way, sticks to and carries out what it commences, holds on long and hard, continues to the end, and may be fully relied upon.

Small — With activity great, and the head uneven, is fitful, impulsive, and, like the weather-vane, shifts with every changing breeze, and is ruled by the other faculties, and as unstable as water

15. CONSCIENTIOUSNESS.

Moral principle, integrity, perception and love of right, innate sense of accountability and obligation, love of justice and truth, regard for duty, desire for moral purity and excellence; disposition to fulfill promises, agreements, etc., the internal monitor which approves the right and condemns the wrong, sense of guilt, contrition, desire to reform, penitence, forgiveness. Adapted to the rightness of right, and the wrongness of wrong, and to the moral nature and constitution of things. Perverted, it makes one do wrong from conscientious scruples, and torments with undue self-condemnation.

Large — Loves the right as right, and hates the wrong; is honest, faithful, upright in motive; means well; consults duty before expediency; feels guilty when conscious of having done wrong; desires forgiveness for the past, and to do better in future; with strong propensities, will sometimes do wrong, and then be exceedingly sorry therefor; and, with a wrong education added, is liable to do wrong, thinking it to be right, because these propensities warp conscience, yet means right.

Average — When not tempted by stronger faculties does what is about right, generally justifies itself, and does not feel particularly indignant at the wrong, or commendatory of the right.

Small — Has few conscientious scruples, has little penitence, gratitude, or regard for moral principle, justice, duty, etc., and is governed mainly by the larger faculties.

16. HOPE.

Expectation, anticipation of future success and happiness. Adapted to man's relations with the future. Perverted, it becomes visionary and castle-building.

Large — Expects much from the future; contemplates with pleasure the bright features of life's picture; never desponds; overrates prospective good, and underrates and overlooks obstacles and evils; calculates on more than the nature of the case will warrant; expects, and hence attempts a great deal, and is therefore always full of business; is sanguine, and rises above present trouble by hoping for better things in future, and though disappointed, hopes on still; builds some air castles, and lives in the future more than in the present.

Average — Expects and attempts too little, rather than too much; with large Cautiousness, dwells more on difficulties than encouragements; is contented with the present rather than lays out for the future.

Small — Expects and undertakes very little; with large Cautiousness, puts off till it is too late; is always behind; may embark in projects after every body else has succeeded, but will then be too late, and in general knocks at the door just after it has been bolted; with large Cautiousness, is forever in doubt; with large Approbativeness and Cautiousness, though most desirous of praise, has little hopes of obtaining it, and therefore is exceedingly backward in society.

17. SPIRITUALITY.

Faith, prescience, the "light within," trust in divine guiding, perception and feeling of the spiritual; interior perception of truth, what is about to transpire, etc. Adapted to a spiritual state of mind and feeling Perversion—superstition, witchcraft, and with Cautiousness large, fear of ghosts.

Large — Perceives and knows things independent of the senses or intellect, or as it were by spiritual intuition; experiences an internal consciousness of what is best, and that spiritual communion with God which constitutes the essence of true piety; loves to meditate; bestows a species of waking clairvoyance, and is as it were "forewarned of God;" combined with large Veneration, holds intimate communion with the Deity, for whom it experiences profound adoration, and takes a world of pleasure in that calm, happy, half-ecstatic state of mind caused by this faculty.

Average — Has some spiritual premonitions and guidings, yet they are not always sufficiently distinct to secure their being followed.

Small — Perceives spiritual truths so indistinctly as rarely to admit them; is not guided by faith, because so weak; like unbelieving Thomas, must see the fullest proof before it believes; has very little credulity, and doubts things of a superhuman origin or nature; has no premonitions, and disbelieves in them.

18. VENERATION.

Devotion, adoration of a Supreme Being, reverence for religion and things sacred, disposition to pray, worship, and observe religious rites. Adapted to a belief in the existence of a God, and the pleasures and benefits experienced by man in worshiping him. Perverted, it produces idolatry, bigotry, religious intolerance, etc.

Large — Experiences an awe of God and things sacred, loves to adore the Supreme Being, especially in his works; feels true devotion, fervent piety, and love of divine things; takes great delight in religious exercises; has much respect for superiority; regards God as the center of hopes, fears and aspirations.

Average — Will adore the Deity, yet often makes religion subservient to the larger faculties.

Small — Experiences little devotion or respect, and is deficient in fervor; cares little for religious observances, and is not easily impressed with the worshiping sentiment.

19. BENEVOLENCE.

Kindness, humanity, desire to make others happy, a self-sacrificing disposition, philanthropy, generosity, the accommodating, neighborly spirit. Adapted to man's capability of making his fellowmen happy. Perversion—misplaced sympathies.

Large — Delights to do good; makes personal sacrifices to make others happy; cannot witness pain or distress, and does what it well can to relieve them; manifests a perpetual flow of disinterested goodness.

Average — Manifests kindness only in conjunction with Adhesiveness and other large faculties; and with only full Adhesiveness, if kind is so for selfish purposes.

Small — Cares little for the happiness of man or brute, and does still less to promote it.

20. CONSTRUCTIVENESS.

The making instinct, the tool-using talent; sleight of hand in constructing things. Adapted to man's need of things made, such as houses, clothes, and manufacturing articles of all kinds. Perverted, it wastes time and money on perpetual motion, and other like futile inventions.

Large — Loves to make; is able to, and disposed to tinker, mend, and fix up, build, manufacture, employ machinery, etc.; shows mechanical skill and dexterity in whatever is done with the hands; with large Causality and perceptives, is given to inventing.

Moderate — Is rather awkward in the use of tools, and in manual operations of every kind.

Small—Is deficient in the tool-using capability, awkward in making and fixing up things, poor in understanding and managing machinery, takes hold of work awkwardly and wrong end first, writes poorly, and lacks both mental and physical construction.

21. IDEALITY.

Perception and admiration of the beautiful and perfect, good taste and refinement, purity of feeling, sense of propriety, elegance, and gentility, polish and imagination. Adapted to the beautiful in nature and art. Perverted, it gives fastidiousness and extra niceness.

Large — Appreciates and enjoys beauty and perfection wherever found, especially in nature; is graced by purity and propriety of expression and conduct, by gracefulness and polish of manners, and general good taste; is pure-minded; enjoys the ideal of poetry, elegance and romance; longs after perfection of character, and desires to obviate blemishes, and, with Conscientiousness large, moral imperfections.

Average — Prefers the plain and substantial to the ornamental, and is a utilitarian; with large intellectual organs, prefers sound, solid matter to the ornament of style, and appreciates logic more than eloquence.

Small — Shows a marked deficiency in whatever appertains to taste and style, also to beauty and sentiment.

B. SUBLIMITY.

Perception and appreciation of the vast, illimitable, endless, omnipotent, and infinite. Adapted to that infinitude which characterizes every department of nature. Perverted, it leads to bombast, and a wrong use of extravagant ideas.

Large — Appreciates and admires the grand, sublime, vast, magnificent, and splendid in nature and art; admires and enjoys exceedingly mountain scenery, thunder, lightning, tempest, vast prospects, and all that is awful and magnificent, also the foaming, dashing cataract, a storm at sea; the lightning's vivid flash, and its accompanying thunder; the commotion of the elements, and the star spangled canopy of heaven, and all manifestations of omnipotence and infinitude; with large Veneration, is particularly delighted by the infinite as appertaining to the Deity, and his attributes and works.

Average — Possesses considerable of this element, when it is powerfully excited, yet, under ordinary circumstances, only an ordinary share of it.

Small — Shows a marked deficiency in this respect, and should earnestly cultivate it.

22. IMITATION.

Ability and disposition to copy, take pattern, and imitate. Adapted to man's requisition for doing, talking, acting, etc., like others. Perverted, it copies even their faults.

Large — Has a great propensity and ability to copy and take pattern from others; do what is seen done.

Average — Can copy tolerably well when this faculty is strongly excited, yet is not a mimic, nor a natural copyist.

Small — Copies even commonplace matter with extraordinary difficulty and reluctance; is original, and generally does everything in its own way.

23. MIRTHFULNESS.

Intuitive perception of the absurd and ridiculous, disposition and ability to joke and make fun, and laugh at what is improper, ill-timed, or unbecoming; pleasantness; facetiousness. Adapted to the absurd, inconsistent, and laughable. Perverted, it makes fun on solemn occasions, and where there is nothing ridiculous at which to laugh.

Large — Enjoys a hearty laugh at the expressions and absurdities of others exceedingly, and delights to make fun out of every thing not exactly proper or in good taste, and is always ready to give as good a joke as it gets.

Average — Is generally serious and sedate, except when this faculty is excited, yet then often laughs heartily, and evinces considerable wit.

Small — Makes little fun, is slow to perceive, and still slower to turn jokes; seldom laughs, and thinks it foolish or wrong to do so.

24. INDIVIDUALITY.

Observation, desire to see and examine, cognizance of individual objects. Adapted to individual existence, or the thingness of things, and is the door through which most forms of knowledge enter the mind. Perverted, makes the starer and the impudently observing.

Large — Gives a great desire to see, know, examine, experience, etc.; is a great and practical observer of men and things; sees whatever is transpiring around, what should be done, etc., is quick of perception; knowing.

Average — Observes only the more conspicuous objects around it, and these more in general than in detail, and what especially interests the larger faculties.

Small — Observes only what is thrust upon his attention, and is quite deficient in this respect.

25. FORM.

Cognizance and recollection of shape, memory of countenances and the looks of persons and things seen, perception of resemblances, family likenesses, etc. Adapted to shape. Perverted, sees imaginary shapes of persons, things, etc.

Large — Notices, and for a long time remembers, the faces, countenances, forms, looks, etc., of persons, beasts, and things once seen; knows by sight many whose names are not remembered.

Average — Has only a fair natural recollection of shapes, countenances, etc.; yet with much practice may do tolerably well, but without practice will be comparatively deficient in these respects, and should cultivate this faculty.

Small — Has a poor recollection of persons, books, etc.; often meets persons the next day after an introduction, or an evening interview, without knowing them; with Eventuality large, may remember their history, but not their faces; with Locality large, where they were seen, but not their looks, etc.

26. SIZE.

Cognizance of bulk, magnitude, quantity, proportion, etc.; ability to measure by the eye. Adapted to the absolute and relative magnitude of things. Perverted, it is pained by slight departures from proportion, or architectural inaccuracies.

Large — Has an excellent eye for measuring angles, proportions, disproportions, and departures therefrom, and with large Constructiveness, gives a good mechanical eye, and judges correctly of quantity in general; loves proportion, and is pained by disproportion, and is necessary to artisans, mechanics, all kinds of dealers, students, etc.

Average — Has a fair eye for judging of bulk, weight, by the size, etc., and with practice would do tolerably well in this respect.

Small — Is obliged always to rely on actual measurements, because the eye is too imperfect to be trusted.

27. WEIGHT.

Intuitive perception and application of the laws of gravity, motion, etc. Adapted to man's requisition for motion. Perverted, it runs imminent risk of falling.

Large — Has an excellent faculty for preserving and regaining balance; riding a fractious horse, skating, carrying a steady hand, etc.; easily keeps from falling, when aloft, or in dangerous places; throws a stone, ball, or arrow straight; is pained at seeing things out of plumb; judges of perpendiculars very exactly; loves to climb, walk on the edge of a precipice, etc.

Average — Similar, only less gifted in this respect; with only average Constructiveness and perceptives, should never engage in working machinery, because deficient in this talent.

Small — Is quite liable to sea-sickness, dizziness when aloft, etc., and naturally clumsy; with large Cautiousness, is afraid to walk over water, even on a wide plank, and where there is no danger; never feels safe while climbing, and falls easily.

28. COLOR.

Perception, recollection, and application of colors, and delight in them, Adapted to that infinite variety of coloring interpersed throughout nature. Perverted, is over-particular to have colors just right.

Large — Can discern and match colors by the eye with accuracy; with Comparison large, can compare them closely, and detect similarities and differences.

Average—Possesses a fair share of this talent, yet is not extraordinary.

Small — Can tell the primitive colors from each other, yet rarely notices the color of dress, eyes, hair, etc.; cannot describe persons and things by them, and evinces a marked deficiency in this respect.

29. ORDER.

Method, system, arrangement. Adapted to heaven's first law Perverted, it overworks, and annoys others to keep things in order, and is tormented by disarrangement.

Large — Has a desire to conduct business on methodical principles, and to be systematic in every thing; with large Acquisitiveness and Causality, has good business talents; with large Locality, has a place for every thing, and every thing in its place; with large Time, has a time for every thing, and every thing in season; with large Continuity, Comparison and the mental temperament, has every idea, paragraph, and head of a subject in its proper place; with large Constructiveness, has its tools where it can always lay hands upon them in the dark

Average — Likes order, yet may not always keep it, and desires more than it practically secures.

Small — Has a very careless, inaccurate way of doing every thing; leaves things where it happens; can never find what is wanted; takes a long time to get ready, or else goes unprepared, and has every thing in perpetual confusion.

30. CALCULATION.

Cognizance of numbers, ability to reckon figures in the head, mental arithmetic. Adapted to the relations of numbers.

Large — Excels in mental arithmetic, in adding, subtracting, multiplying, dividing, reckoning figures, casting accounts, etc., in the head; with large perceptives, has excellent business talents, and large Locality and Causality added, excels as a mathematician.

Average — Can learn arithmetic and do quite well by practice, yet is not naturally gifted in this respect.

Small — Is dull and incorrect in adding, subtracting, dividing, etc ; dislikes figuring; is poor in arithmetic, both practical and theoretical, and should cultivate this faculty.

31. LOCALITY.

Cognizance of place; recollection of the looks of places, roads, scenery, and the location of objects, where on a page ideas are to be found, and position generally, the geographical faculty; desire to see places, and the ability to find them. Adapted to the arrangement of space and place. Perverted, it creates a cosmopolitic disposition, and would spend every thing in traveling.

Large — Remembers the whereabout of whatever it sees; can carry the points of the compass easily in the head, and is lost with difficulty either in the city, woods or country; desires to see places, and never forgets them; studies geography and astronomy with ease, and rarely forgets where things are seen

Average — Recollects places and positions seen several times, yet in city or roads is occasionally lost; has no great geographical talent, yet by study and practice can do tolerably well.

Small — Is decidedly deficient in finding places, and recollects them with difficulty even when perfectly familiar with them.

32. EVENTUALITY.

Memory of facts, recollection of circumstances, news, occurrences, and historical, scientific, and passing events; what has been said, seen, heard, and once known. Adapted to action, or those changes constantly occurring around or within us.

Large — Has a clear and retentive memory of historical facts, general knowledge, what has been seen, heard, read, done, etc., even in detail; considering advantages, is well informed and knowing; desires to witness and institute experiments; find out what is and has been, and learn anecdotes, particulars, and items of information, and readily recalls to mind what has once entered it; has a good general matter-of-fact memory, and picks up facts readily.

Average — Recollects leading events and interesting particulars, yet is rather deficient in memory of items and details, except when it is well cultivated.

Small — Has a treacherous and confused memory of circumstances: often forgets what is wanted, what was intended to be said, done, etc.; has a poor command of knowledge, and should strenuously exercise this remembering power.

33. TIME.

Cognizance and recollection of duration and succession, the lapse of time, when things occurred, etc., and ability to carry the time of the day in the head punctually. Adapted to periodicity. Perverted, it is excessively pained by bad time in music, not keeping steps in walking, etc.

Large — Can generally tell when things occurred, at least the order of events and the length of time between one occurrence and another, etc.; tells the time of the day without timepiece or sun, well, and keeps an accurate chronology in the mind of dates, general and particular.

Average—With practice, has a good memory of dates and successions, yet without it rather deficient.

Small — Has a confused and indistinct idea of the time when things transpired, and forgets dates.

34. TUNE.

Ability to learn and remember tunes by rote; the music instinct and faculty. Adapted to the musical octave. Perversion—excessive fondness for music to the neglect of other things.

Large — Loves music dearly; has a nice conception of concord, melody, etc., and enjoys all kinds of music.

Average — Has fair musical talents, yet to be a good musician, requires considerable practice; can learn tunes by rote, yet with some difficulty.

Small — Learns to sing or play tunes with great difficulty, and that mechanically, without emotion or effect.

35. LANGUAGE.

Expression of ideas and feelings by words, written or spoken; gesture, looks, and action; the communicative faculty and instinct in general. Adapted to man's requisition for holding communication with man. Perverted, it creates garrulity, excessive talkativeness, telling what does harm, etc.

Large — Expresses ideas and feelings well, both verbally and in writing; can learn to speak languages easily; recollects words and commits to memory well; gives freedom, copiousness, and power of expression.

Average — Has fair communicating talents, yet not extra.

Small — Has poor lingual and communicative talents; hesitates for words, speaks with extreme difficulty and very awkwardly, and should cultivate this faculty by talking and writing much.

36. CAUSALITY.

Perception and application of causes, adaptation of ways and means to ends. Adapted to the institution in nature of causes and effects. Perverted, by selfishness, it reasons in favor of untruth, and attains injurious ends.

Large — Desires to know the why and wherefore of things, and to investigate their laws; reasons clearly and correctly from causes to effects, and from facts to their causes; gives uncommon capabilities of planning, contriving, inventing, creating resources, and making the head save the hands; kills two birds with one stone; predicts results, and arranges things so as to succeed; synthetizes, and puts things together well.

Average — Plans and reasons well in conjunction with the larger faculties, but poorly with the smaller ones.

Small— Is deficient in reasoning and planning power; needs perpetual telling and showing; seldom arranges things beforehand, and then poorly; should work under others; lacks force of idea and strength of understanding.

37. COMPARISON.

Inductive reasoning, ability and disposition to classify, compare, draw inferences from analogy, etc. Adapted to those classifications which pervade universal nature. Perverted, is too redundant in proverbs, fables, and figures of speech.

Large — Reasons clearly and correctly from conclusions and scientific facts up to the laws which govern them; discerns the known from the unknown, detects error by its incongruity with facts; has an excellent talent for comparing, explaining, expounding, criticising, exposing, etc.; employs similes and metaphors well; puts this and that together, and draws inferences from them.

Average — Shows this talent in a good degree in conjunction with the larger faculties, but is rather wanting in reference to the smaller ones.

Small — Has a poor talent for drawing inferences; lacks appropriateness in every thing, and should cultivate this faculty.

C. HUMAN NATURE.

Discernment of character, perception of motives, intuitive physiognomy. Adapted to man's need of knowing his fellow-men. Perverted, it produces suspiciousness.

Large — Reads men intuitively from their looks, conversation, manners, and walk, and other kindred signs of character; with Individuality and Comparison large, notices all the little things they do, and founds a correct estimate upon them, and should follow first impressions touching persons; with full Secretiveness and large Benevolence added, knows just how to take men, and possesses much power over mind.

Average — Has fair talents for reading character, yet is not extra in this respect, and may safely cultivate it.

Small — Is easily imposed upon by others, with large Conscientiousness and small Secretiveness thinks every body tells the truth, is too confiding, and fails sadly in knowing where and how to take things.

D. AGREEABLENESS.

Persuasiveness, pleasantness, blandness, etc. Adapted to please and win others.

Large — Has a pleasing, persuasive, conciliatory mode of addressing people, and of saying things.

Average — Has a good share of pleasantness in conversation and appearance, except when the selfish faculties are excited, but is then repulsive.

Small — Says even pleasant things very unpleasantly, and fails sadly in winning the good graces of people.

SIZE OF HEAD AS INFLUENCING CHARACTER.

Size of head and organs, other things being equal, is the great phrenological condition. Though tape measurements, taken around the head, from Individuality to Philoprogenitiveness, give some idea of the size of brain, the fact that some heads are round, others long, some low, and others high, so modifies these measurements that they do not convey any very correct idea of the actual quantity of brain. Yet these measurements range somewhat as follows: Least size of adults compatible with fair talents, 20¼; 20¾ to 21¼, moderate; 21¼ to 22, average; 22 to 22¾, full; 22¾ to 23¾, large; above 23¾, very large. Female heads, ½ to ¾ below these averages.

Large — One having a large-sized brain, with activity average, will possess considerable energy of intellect and feeling, yet seldom manifest it, unless it is brought out by some powerful stimulus, and will be rather too indolent to exert, especially his intellect; with activity full, will be endowed with an uncommon amount of the mental power, and be capable of doing a good deal, yet require considerable to awaken him to that vigorous effort of mind of which he is capable. If his powers are not called out by circumstances, and his organs of practical intellect are only average or full, he may pass through life without attracting notice or manifesting more than an ordinary share of talent, but if the perceptive faculties are strong, or very strong, and his natural powers put in vigorous requisition, he will manifest a vigor and energy of intellect and feeling quite above mediocrity—be adequate to undertakings which demand originality of mind and force of character—yet, after all, be rather indolent. With activity great, or very great, he will combine great power of mind with great activity, exercise a commanding influence over those minds with which he comes in contact; when he enjoys, will enjoy intensely, and when he suffers, suffer equally so; be susceptible of strong excitement, and, with the organs of the propelling powers and of practical intellect large or very large, will possess all the mental capabilities for conducting a large business, for rising to eminence, if not pre-eminence, and discover great force of character and power of intellect and feeling. With activity moderate, when powerfully excited, will evince considerable energy of intellect and feeling, yet be too indolent and too sluggish to do much; lack clearness and force of idea, and intenseness of feeling; unless literally driven to it, will not be likely to be much or to do much, and yet actually possess more vigor of mind and energy of feeling than he will manifest. With activity small, will border upon idiocy.

Very Large — One having a very large head, with activity average or full, on great occasions or when his powers are thoroughly roused, will be truly great, but upon ordinary occasions, will seldom manifest any remarkable amount of mind or feeling, and perhaps pass through life with the credit of being a person of good natural abilities and judgment, yet nothing more. With great activity and strength and large intellectual organs, will be a natural genius, endowed with very superior powers of mind and vigor of intellect, and, even though deprived of the advantages of education, his natural talents will surmount all obstacles, and make him truly talented. With activity very great, and the organs of practical intellect and of the propelling powers large, or very large, will possess the first order of natural abilities; manifest a clearness and force of intellect which will astonish the world, and a power of feeling which will carry all before him, and, with proper cultivation, enable him to become a bright star in the firmament of intellectual greatness, upon which coming ages may gaze with delight and astonishment. His mental enjoyment will be most exquisite, and his sufferings equally keen.

Full — One having a full-sized brain, with activity great, or very great, and the organs of practical intellect and of the propelling powers large, or very large, although he will not possess greatness of intellect, nor a deep, strong mind, will be very clever; have considerable talent, and that so distributed that it will show to be more than it really is; is capable of being a good scholar, doing a fine business, and with advantages and application, of distinguishing himself somewhat, yet he is inadequate to a great undertaking; cannot sway an extensive influence, nor be really great. With activity full, or average, will do only tolerably well, and manifest only a common share of talent; with activity moderate, or small, will neither be nor do much worthy of notice.

Average — With activity great, manifests a quick, clear, sprightly mind, and off-hand talents, and is capable of doing a fair business, especially if the stamina is good. With activity very great, and the organs of the propelling powers and of practical intellect large, or very large, is capable of doing a good business, and may pass for a man of fair talent, yet will not be original or profound; will be quick of perception, have a good practical understanding; will do well in his sphere, yet never manifest greatness, and out of his sphere, be commonplace. With activity only average, will discover only an ordinary amount of intellect; be inadequate to any important undertaking; yet, in a small sphere, or one that requires only a mechanical routine of business, may do well. With moderate or small activity, will hardly have common sense.

Moderate—One with a head of only moderate size, combined with great or very great activity, and the organs of the propelling powers and of practical intellect large, will possess a tolerable share of intellect, yet be more showy than sound; with others to plan for and direct him, will execute to advantage, yet be unable to do much alone; will have a very active mind, and be quick of perception, yet after all, have a contracted intellect; possess only a small mental calibre, and lack momentum, both of mind and character. With activity only average or fair, will have but a moderate amount of intellect, and even this scanty allowance will be too sluggish for action, so that he will neither suffer nor enjoy much. With activity moderate, or small, will be idiotic.

Small, or Very Small — One with a small or very small head, no matter what may be the activity of his mind, will be incapable of much intellectual effort, of comprehending even easy subjects, or of experiencing much pain or pleasure; in short, will be mentally imbecile.

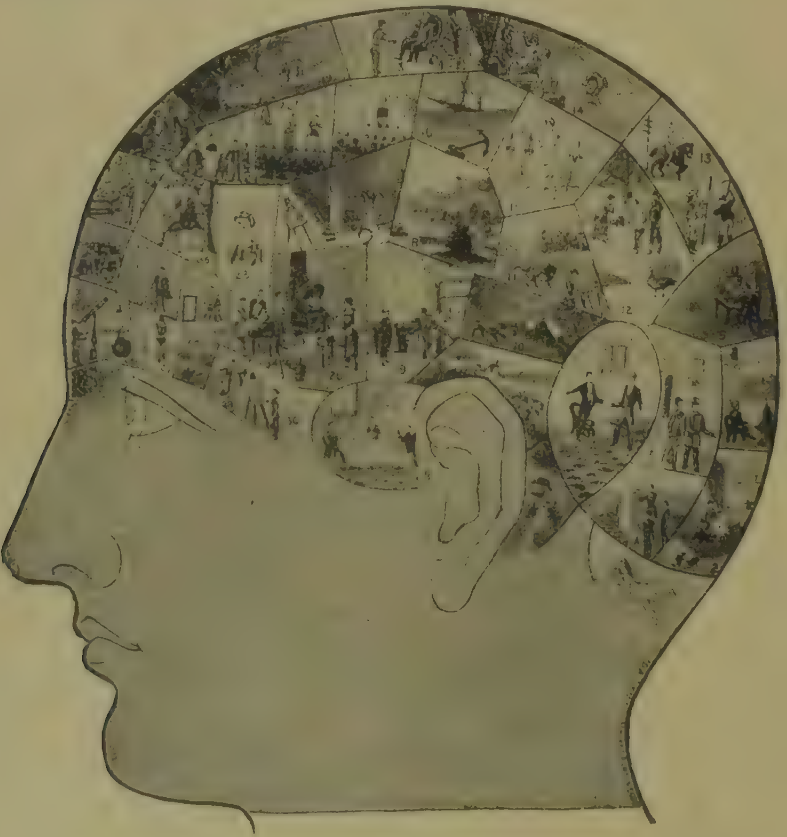
SIZE OF BRAIN AS AFFECTING MENTALITY.

Most great men have great heads. Webster's head measured over 24 inches, and Clay's considerably above 23; and this is about Van Buren's size; Chief Justice Gibson's, the greatest jurist in Pennsylvania, 24¼; Napoleon's reached nearly or quite to 24, his hat passing easily over the head of one of his officers, which measured 23[illegible], and Hamilton's hat passed over the head of a man whose head measured 23½. Burke's head was very large; so was Jefferson's, while Franklin's hat passed over the ears of a 24-inch head. Small and average-sized heads often astonish us by their brilliancy and learning, and, perhaps, eloquence, yet they fail in that commanding greatness which impresses and sways mind. The phrenological law is, that size, other things being equal, is a measure of power, yet these other conditions, such as activity, power of motive, health, physiological habits, etc., increase or diminish the mentality, even more than size.

and Redeemed." She assisted her husband in his Phrenological and literary labours, and travelled and lectured with him until her death in London in 1879, in her fifty-seventh year. Being so fully prepared to give medical and Phrenological advice, she collected a wide circle of friends.

Jessie Allen Fowler

was born in New York City and came first to England in 1866. She attended lectures and dissected the brain at the London Medical School for Women, and after close study with her father, took his professional work when he was in America in 1880. She continued to help him on his return, and in 1883 she also revisited America. In 1887 she made a professional tour through the Australian Colonies in company with her sister and brother-in-law, Mr. and Mrs. Piercy, who acted as secretary and agent. She lectured on Phrenology and Physical Culture in the principal cities and in the interior, to all classes of audiences, who gave her a hearty welcome, though in many places in the bush a woman had never been heard to speak or preach. She was on tour eighteen months, and now assists her father in his London office. She has written and read numerous papers on Phrenological, Educational and Scientific Subjects and Temperance, before some of the learned Societies, such as the British Association, &c., and has published various lectures on the above subjects. Mr., Mrs. and Miss Fowler have examined many members of the aristocracy and some of Royal blood.



L. N. Fowler's New Phrenological Chart, 1895.

Numbering and Definition of the Organs.

1 AMATIVENESS, Love between the sexes.
A CONJUGALITY, Matrimony, love of one.
2 PARENTAL LOVE, Regard for offspring, pets, etc.
3 FRIENDSHIP, Adhesiveness, sociability.
4 INHABITIVENESS, Love of home.
5 CONTINUITY, One thing at a time.
E VITATIVENESS, Love of life.
6 COMBATIVENESS, Resistance, defence.
7 DESTRUCTIVENESS, Executiveness, force.
8 ALIMENTIVENESS, Appetite, hunger.
9 ACQUISITIVENESS, Accumulation.
10 SECRETIVENESS, Policy, management.
11 CAUTIOUSNESS, Prudence, provision.
12. APPROBATIVENESS, Ambition, display.
13. SELF-ESTEEM, Self-respect, dignity.
14 FIRMNESS, Decision, perseverance.
15. CONSCIENTIOUSNESS, Justice, equity.
16. HOPE, Expectation, enterprise.
17. SPIRITUALITY, Intuition, faith, credulity.
18. VENERATION, Devotion, respect.
19. BENEVOLENCE, Kindness, goodness.
20 CONSTRUCTIVENESS, Mechanical ingenuity.
21. IDEALITY, Refinement, taste, purity.
B SUBLIMITY, Love of grandeur, infinitude.
22 IMITATION, Copying, patterning.
23 MIRTHFULNESS, Jocoseness, wit, fun.
24. INDIVIDUALITY, Observation.
25. FORM, Recollection of shape.
26. SIZE, Measuring by the eye.
27. WEIGHT, Balancing, climbing.
28 COLOUR, Judgment of colours.
29 ORDER, Method, system, arrangement.
30 CALCULATION, Mental Arithmetic.
31 LOCALITY, Recollection of places.
32 EVENTUALITY, Memory of facts.
33. TIME, Cognizance of duration.
34. TUNE, Sense of harmony and melody.
35. LANGUAGE, Expression of ideas.
36. CAUSALITY, Applying causes to effect. [tion
37 COMPARISON, Inductive reasoning, illustra
C. HUMAN NATURE, Perception of motives.
D AGREEABLENESS, Pleasantness, suavity.

Kings and Queens.

Queen Elizabeth---Forty Years a Reigning Sovereign Over a Prosperous Kingdom.

IN THE palace of Greenwich, September 7, 1533, was born the English sovereign, Queen Elizabeth, known as "the Virgin Queen." She was the daughter of Henry VIII. and his second wife, Anne Boleyn. Her education was intrusted to Protestant teachers, and she acquired considerable knowledge of classical literature. In 1558, at the age of twenty-five years, she ascended the throne, the successor of her half sister known in history as "Bloody Mary." Elizabeth's right to be the queen of England was denied by all the Catholics in that kingdom and in other countries, for the English Catholics looked upon the young and beautiful Mary, queen of Scots, as the rightful heir to the throne. Mary was a grandniece of Henry VIII., the father of Elizabeth, and daughter of James V. of Scotland. She had been trained in the Catholic religion at the French court. The year after Elizabeth became queen, Mary was married to Francis II., then a prince, who became king of France in the following year, but who died in the succeeding year. In 1561 Mary returned to Scotland and was received as its rightful sovereign. In 1558 the Catholic powers of Europe determined, if possible, to drive Elizabeth from the throne, and Spain fitted out that celebrated collection of vessels and armies of soldiers, called "the invincible armada," the largest fleet then ever known, to invade England. It consisted of 129 ships, 3,000 cannon and 20,000 men, while 34,000 other armed men composed a land force to co-operate with the fleet. The "armada" reached the English channel in July, 1588, and there encountered the British fleet of thirty vessels. The contest between the two fleets lasted for several days, and the superior character of the little English vessels enabled them to harass and drive the big ships of their enemies to the French coast. The Spanish commander then attempted to return to Spain by sailing his vessels around the north coast of Scotland, but furious storms scattered them hither and thither, destroying many, and only one-third of the great "invincible armada," and that in a bad condition, ever returned to report the disaster. The result was a weakening of the influence of Spain over other countries of Europe, and a strengthening of the cause of Protestantism. Elizabeth, fortunately for herself and her people, had two excellent advisers: Lord Burleigh, a wise statesman, who was her lord treasurer, and Sir Francis Walsingham, her secretary of state. For forty years she was guided by the advice of Lord Burleigh, and during those years her reign was glorious. the nation was raised to a high degree of prosperity, and its enemies were baffled. Art, education, discoveries and literature throve during her administration; the age produced Shakspeare, Bacon and others, the greatest men and women that the world has known, while commerce and manufactures experienced a vast improvement. Mary, queen of Scots, after her return to Scotland, met with great opposition from the Protestant supporters of Elizabeth. Seven years she braved these storms of wrath, but was at length compelled to flee to England to implore the pity of Elizabeth. The queen received her more as a prisoner of state than a suppliant for favor, and kept her in confinement for eighteen years. During these years numerous plots were formed by the Catholics to harass Elizabeth, until finally a law was passed that made Mary personally responsible, although a prisoner, for any conspiracy created against the queen by the friends of the captive. Soon afterwards a plot to assassinate Elizabeth was formed and discovered, and for this the unfortunate Mary was formally tried, sentenced to die, and beheaded, at the age of forty-five, in the year 1587. In the latter portion of her life the favorite noble of Queen Elizabeth was the earl of Essex, a young man, described as possessing great courage, but headstrong and weak, who presumed so far upon his favor with the queen that he became insolent to her, and one day she gave him a hearty box on the ear. In one of his freaks, afterwards, he attempted, in the streets of London, to raise an insurrection against her. For this he was arrested and condemned to die. At some previous time she had given Essex a certain ring, with instructions to send it to her whenever he might be in any danger, and now she waited to receive the ring. It did not come, and she unwillingly was obliged to sign his death-warrant. After his execution a lady confessed upon her dying bed that Essex had confided his ring to her to carry it to the queen, and that she had been induced by her husband, a bitter enemy of Essex, not to deliver it. On hearing this, the rage and grief of the queen, who had never been happy since the death of Essex, were terrible. Ten days and nights she lay upon the floor, refusing food and medicine; then falling asleep, she died, in her seventieth year, March 24, 1603. Possessing many good qualities, with numerous weaknesses of character, she derived glory from the national prosperity of England during her reign of forty-five years, and as a brilliant scholar. She was familiar with Greek and Latin, and, besides writing an original comment on Plato, some poetry and various prayers, meditations and speeches, she translated a play of Euripides, a dialogue of Xenophon, two orations of Isocrates, Sallust's "Jugurthine War," part of Horace's "Art of Poetry," and Bœthius' "Consolations of Philosophy."

Queen Victoria. Lady Jane Grey.

The One Successful and Prosperous; the Other Unfortunate.

THE PRESENT queen Victoria Alexandrina Guelph, of Great Britain and Ireland and empress of India, is the daughter and only child of Edward, duke of Kent, fourth son of George III., by his wife, Victoria Mary Louisa, of Saxe-Coburg-Saalfield, Germany. She was born at Kensington palace, England, May 24, 1819. Her father died in 1820, and her general education, under her mother's supervision, was conducted by the duchess of Northumberland, and until within a few weeks before she ascended the throne, she lived in comparative retirement, diversified by visits to various portions of the United Kingdom. The death of the reigning king, William IV., occurred in June, 1837, and on the 28th of that month Victoria, by royal succession, was crowned queen of Great Britain and Ireland at Westminster abbey. She came into power in a time of England's prosperity, and among her first acts was a prayer to God for strength and wisdom to rule her people aright. And it is remarkable that during her long reign Great Britain has enjoyed more and richer advantages in religion, science, art, commerce, and literature than under any other modern sovereignty. She immediately became a favorite with her people, and has managed to retain their esteem and affection up to the present moment by her womanly and queenly character. In 1840, Victoria was united to Albert, prince of Saxe-Coburg-Gotha, second son of duke Ernest, who was born in Germany in 1819, and was in every way a suitable husband for the young and popular queen. He was a man of peaceful habits and refined taste, whose pursuits were of an exalted, benevolent and useful character; and he was a competent and active participator in public measures, which tended to increase the happiness and prosperity of the English people. Nine children were born to this royal couple, as follows: Victoria Adelaide Mary Louisa, who was married in 1858 to the crown prince, Frederick William, of Prussia; Albert Edward, prince of Wales, who was married in 1863 to the Princess Alexandra, of Denmark; Alice Maud Mary, who was married in 1862 to Prince Louis, of Hesse-Darmstadt, Germany, and died in 1878; Alfred Ernest, duke of Edinburgh, who was married in 1874 to the grand duchess Marie Alexandrovna, only daughter of the emperor of Russia; Helena Augusta Victoria, who was married in 1866 to Prince Christian of Schleswig-Holstein, Germany; Louise Caroline Alberta, who was married in 1871 to the marquis of Lorne, afterwards governor-general of Canada; Arthur William Patrick Albert, duke of Connaught; Leopold George Duncan Albert, and Beatrice Mary Victoria Feodore. The duchess of Kent, Queen Victoria's mother, died in March, 1861, and her dearly-beloved husband, Prince Albert, suddenly expired in the following December. The whole kingdom was thrown into grief by the death of the prince consort, and for many years she deeply mourned her heavy loss; indeed, that event has been the means of inducing continuous habits of seclusion in her private life, while she has continued to exercise her powers and duties as the sovereign of a mighty nation with great fidelity to her subjects. Her public history is that of Great Britain during the past five decades. As a wife, a mother and a queen she has experienced only the changes, the sorrows and joys which usually fall to the lot of ordinary women, but in all and through all she has proven herself an honor to her sex.

Victoria I. of England.

(From Photo., Russell & Sons, Baker Street, W.)

LADY JANE GREY.

LADY JANE GREY, who was the daughter of the duke of Dorset, was born at Bradgate, Leicestershire, England, in 1537. She was a great-granddaughter of King Henry VII. Her talents, which were of a superior order, were developed at an early age, so that when she was fifteen years old she had learned the Greek, Latin, Hebrew, Chaldee, Arabic, French and Italian languages. In 1553 she was married to Lord Guilford Dudley, son of the duke of Northumberland. Edward VI., reigning sovereign at that time, being opposed to the religious principles of his sister Mary, was disposed to bequeath his crown to Lady Jane. After his death she reluctantly accepted the crown of England. She reigned twelve days when Mary, Edward's sister, whom the Catholics had declared for as sovereign, became queen, and Lady Jane was committed as a prisoner, with her husband, to the tower of London, and February 12, 1554, both were beheaded at the command of Queen Mary. Lady Jane refused to the last to renounce Protestantism.

Peter the Great,

Former Distinguished Emperor of Russia.

PETER I., ALEXEIEVITCH, one of the czars of Russia, commonly called "the Great," was born near the city of Moscow, June 10, 1672. In 1682 he and his brother Ivan became joint heirs to the crown, and when Ivan died in 1696, Peter became the sole emperor. Early in his reign Peter began to form projects to increase the civilization and the greatness of Russia. His first attention was turned to military and naval improvements, and in these he was ably assisted by his confidential counselor, Lefort, a native of Geneva, Switzerland. Twice, once in 1697, and again in 1716, Peter made journeys in order to acquire knowledge. In the course of his first tour he came to Saardam, where he worked as a shipwright in the dockyard. He was also instrumental in inviting men of talent and mechanical skill in other countries to settle in Russia. From 1700 to 1721 he was engaged in a war with Sweden, at the beginning of which he was repeatedly defeated, but at length the tide of battle turned, and he gained a decisive victory at Pultowa, in 1709, and wrested several provinces from the Swedes. Upon a part of the territory thus gained he founded the city of St. Petersburg, the present great capital city of the empire. In a war with the Turks, in 1711, he was surrounded by the enemy in force, on the banks of the river Pruth, and obliged to sign a disadvantageous treaty of peace. In a war against Persia he was more successful, and in 1723 he compelled that power to cede extensive possessions to Russia. In his latter years Peter was brought to sorrow by the undoubted unfaithfulness of his wife, Catharine, and the disobedience of Alexis, his son. He spared the life of the empress, but his son was arraigned for trial and put into prison where he died July 7, 1718, probably slain. The greatness of Alexeievitch is found in the extensive internal improvements which he projected and carried to completion

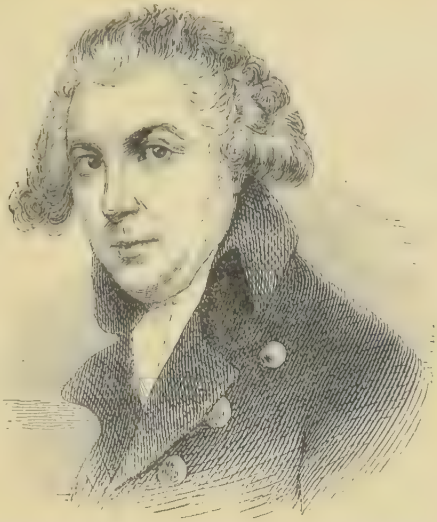
Lady Jane Grey.

King Solomon.

Famous Philosopher of Olden Times.

KING SOLOMON was born at Jerusalem in the year 1033 before Christ. He was the son of King David and Bathsheba, his wife, of Israel. His education was superintended by his father, and was of such a character as befitted his station and the designs foreshadowed of his career. Adonijah, also a son of David by another wife, having attempted to assume the reins of government, Solomon was appointed his father's successor on the throne of Israel, and inaugurated amid the acclamations of the people. His reign having been established, he formed an alliance with Pharaoh, king of Egypt, whose daughter he married and brought to Jerusalem. At Gibeon, on one occasion, he offered a thousand burnt sacrifices before the Lord, and when he slept, God appeared to him, it is said, in a dream, and said, "Ask of Me what you desire." In reply, Solomon asked for divine wisdom, an understanding heart, and such other qualifications as were necessary for his good government of the people. The request, it is stated, was granted, with the promise of great prosperity, of riches and honor, so that there should be no king like him. This wisdom and prosperity were soon manifested, as his history shows. His dominions extended from the Mediterranean sea to the river Euphrates, from the Orontes to the Red sea and the Persian gulf, and it is recorded that he "had peace on all sides round about him." At that time the Hebrews were the ruling people in the west of Asia. The scriptural account of the glory of Solomon's reign is plain and decisive. It is found in the books of Kings and the Chronicles in the Christian Bible. The temple at Jerusalem, as a national house of worship for the Jews, was Solomon's first great undertaking, and in this he was directed both by the charge of his dying father and his own desire. In the needful preparations he derived important aid from Hiram, or Huram, the king of Tyre, the friend and ally of his father, and the Tyrians, then the most skillful mechanics and sailors in the world, were engaged in the service of the Hebrews. Timber from the forests of Lebanon was drawn to the Mediterranean sea, floated to the sea-port of Joppa, and paid for in the agricultural products of Judea. Probably 180,000 men were employed in the forests and the quarries where the stone was hewn for the temple, besides those engaged in preparing its site and in other labor. Seven and a half years this splendid fabric silently but rapidly proceeded toward completion. Every part and material of the immense structure, even the largest beams and the most ponderous stones, were fitted to each other before they were brought to the building. It was the most costly and magnificent edifice of which an account is given in history. When it was completed it was dedicated to the service of God with much solemnity in the presence of all the Hebrews, the feast of dedication being kept for seven days, and concluded with a solemn assembly. When the temple was completed, Solomon erected other splendid buildings. His own palace occupied thirteen years in its construction at Jerusalem, and employed the utmost skill of the artificers of that day and the vast resources of wealth and power at his command. "The whole house was built of white marble, cedar, gold and silver, with precious stones upon the walls and ceiling," according to the account in Josephus' works. He had abundance of horses and chariots of war, and his court was a scene of unparalleled and gorgeous magnificence. His vast resources of wealth were various. A large income was derived from commerce with Tyre and other countries, as the trade of the civilized world then almost entirely passed under the control of Solomon and Hiram. Business was not conducted by individuals; the profits were not subject to much competition; all was controlled by kingly authority, and a large proportion of the advantages was gathered into the royal treasury. An inland trade from Egypt on the south, for linen and horses, through Judea to Syria and other countries to the north and east, brought considerable profits to Solomon, in addition to those resulting from the spice-merchants, or the Arabian caravans which traversed his kingdom, carrying all the precious commodities of the East, together with other caravans proceeding directly across Asia from Babylon and the Euphrates to Tyre. Solomon, it is claimed, was the wisest man of his time, and his reputation spread through all nations. "He was the greatest philosopher of antiquity, as well in natural history as in morals, being acquainted with the nature of plants and trees, also of beasts, of birds, of reptiles and of fishes. There was a concourse of strangers from all countries to hear his wisdom, and embassadors from the most remote princes. He made gold and silver very abundant in Jerusalem, and cedars as plentiful as the sycamore trees in the valley." In his literary labors he was also famous for the composition or collection of 3,000 proverbs and 1,005 religious songs. Of his writings there remain to us only his book of "Proverbs," a portion of his "Psalms," his "Ecclesiastes," and his "Song of Songs," known in the Bible as "Solomon's Song." In his domestic arrangements he was extravagant, having 700 legitimate wives and 300 other women in his household. In his latter years he was led by some of his heathen wives to worship their idols, for whom he built temples, in which he burned incense and offered sacrifice. This delusion, it is calculated, overtook him about the thirty-fourth year of his reign and the fifty-fourth of his age. Whether he ever again turned to the worship of the Supreme God is not known. In his writings are purity, morality, and sublimity, leaving no intimation of anything but the excellence of his character.

R. BRINSLEY SHERIDAN.



Born 1751.

Died 1816.

Poet, Play-Writer and Politician.

HEREWITH is presented the sketch of one who, though never conspicuously distinguished as a poet, nevertheless so favorably impressed the British public with his literary talent, as to find a place in the poet's corner in Westminster Abbey at his death.

Richard Brinsley Sheridan, a prominent dramatist and politician, was born in Dublin, Ireland, in September, 1751. His father, Thomas, was a son of Thomas Sheridan, senior, an Irish clergyman, while his mother, Frances, was of English extraction.

Richard's father was an elocutionist, for some years manager of the Dublin Theater, and a literary man of note. His mother was a novelist. Richard thus came into the world with a considerable inheritance of genius, and was destined to make his mark.

At the age of eleven years he was sent to Harrow, and later went to Bath, where his family had settled. Here, with an associate, he engaged in literary work. Falling in love with a beautiful young vocalist, Miss Linley, of that city, he suddenly left with her and proceeded to Calais, France, in 1772, where they were secretly married. This movement was made in order to escape the annoyance of a libertine named Matthews, who pursued the lady. Subsequently two duels were fought with Matthews, Sheridan being wounded in the second. He became a law-student in the Middle Temple in 1773, and was soon married by license, when he domiciled himself in a cottage at East Burnham.

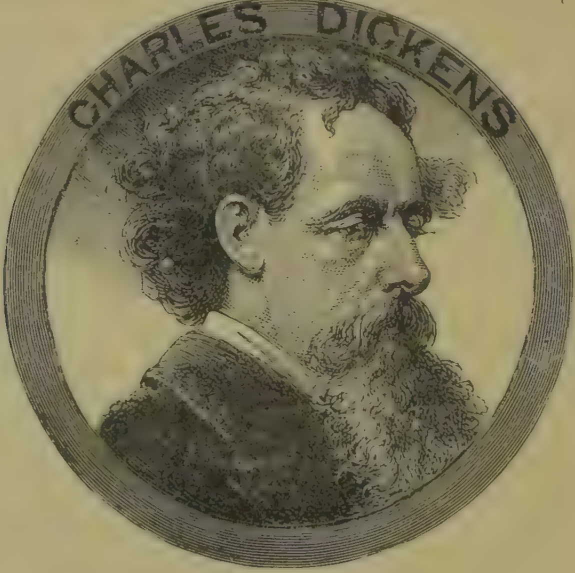
In 1775 his play of "The Rivals" was produced at Covent Garden, London; it became a favorite and has since remained so. This was followed by a farce and the comic opera of "The Duenna," which had a successful run. He became interested in the Drury Lane theater, and in 1777 brought out "School for Scandal," which made him famous in the sphere of dramatic literature.

Later he joined the whig party, and connected himself with a periodical called *The Englishman*. He was made a member of parliament from Stafford, in 1780, and afterwards was under-secretary of state during the Rockingham ministry. The latter position was resigned and he became secretary of the treasury. On the occasion of the impeachment trial of Warren Hastings, he made the greatest speech of his life, four days being spent in its delivery. In 1790 he was again sent to parliament from Stafford.

On the death of his wife, in 1792, he married Miss Ogle, a daughter of the dean of Winchester. In 1799 the play of "Pizarro" was brought forward, and has ever since possessed a charm over lovers of pure drama.

Sheridan's improvident habits involved him in debt and misfortune; while the loss by fire of Drury Lane theater, his failure of re-election to office in 1812, together with drink and waste of health, completed his ruin. He died in London, July 7, 1816, attended by his medical adviser and three other friends, who remained true to him till the end.

Sheridan and his associate, at Bath, wrote "A Translation of Aristænetus." His life by Thomas Moore was published in 1825, and his speeches were edited and issued in London in 1816 His poems, dramas, and other matter, were printed in 1874.



Born 1812.

Died 1870.

FAMOUS ENGLISH NOVELIST.

ONE OF THE most popular and fascinating of modern novelists, was Charles Dickens, the son of John Dickens, a clerk in the pay office of the British navy. He was born near Portsmouth, Eng. Feb. 7, 1812. In 1816 the family removed to Chatham, where Charles' education was begun, and so precocious was his literary talent that he wrote a tragedy when nine years old. The father having become bankrupt, the family suffered the inconveniences of poverty; Charles was set at work in a blacking manufactory, and the father found employment as a reporter on the London *Morning Chronicle*, being helped also, materially, by the receipt of a small legacy. After two years' schooling, Charles was placed in an attorney's office, and read novels and visited theaters when not at work. He then applied himself to the study of short-hand writing with so much assiduity that at the age of nineteen was engaged as a reporter for two London newspapers.

His first published literary sketch, "Mr. Timms and his Cousin," appeared in the *Old Monthly Magazine*, in 1834, and was soon followed by others, under the signature of "Boz," a name that originated in the ludicrous nicknaming of a younger brother. Subsequently these sketches, for which Dickens received two guineas a week in addition to his regular salary on the *Evening Chronicle*, were published in book form, in 1836. That year Dickens married Miss Kate Hogarth, the eldest daughter of a newspaper writer. About this time Dickens began, as a serial, the publication of the "Pickwick Papers," a work which won him fame and money, and paved the way for his life-long career as a successful novelist. It became exceedingly popular in Europe and America. "Oliver Twist" appeared in book form in 1838, having previously run through *Bentley's Miscellany* as a serial—a magazine of which he was at one time the editor. Other books followed, the most noted of which, "Nicholas Nickleby," was concluded in October, 1839 "The Old Curiosity Shop" and "Barnaby Rudge" appeared in numbers in 1840 and 1841, and added to his growing fame.

In 1842 Dickens and his wife visited America for a few months, and were received with fulsome enthusiasm by the people. The result of the visit was two books—"American Notes" and "Martin Chuzzlewit"—in which American institutions and character were severely criticised.

Continuing his literary labors, Dickens went to Italy, in 1844, remaining there about a year. In January, 1846, he became editor of the London *Daily News*, but this position he only held four months. In 1858 Dickens and his wife amicably separated for private reasons. In 1859 he closed up *Household Words*, a weekly magazine which he had started in 1850, and began another similar periodical, *All the Year Round*, which he conducted until his death, bequeathing it to his oldest son.

In 1858 Dickens began his career as a public reader of his own writings, in which he met with great success in Great Britain, Ireland, France and America. On the occasion of his second visit to this country in 1867 he was received with enthusiasm, the animosities attending his assaults upon their institutions and people, in 1843, were forgiven, and he went home, after a few months, better pleased with the Americans and they with him. His last public reading was given in England, in March, 1870. He was then engrossed in the production of a new serial novel, "Edwin Drood," which was about half finished at the time when he suddenly died at Gadshill, near Rochester, England, June 9, 1870.

Dickens was emphatically the people's novelist, and his faculty of teaching some wholesome public moral by his fictions did much toward the adoption of some important reforms. He was buried in Westminster Abbey, without pomp. Shortly before his death he visited Queen Victoria at her request, and was offered the honor of knighthood; but he declined it. His works, besides those mentioned above, include the following: Eight "Christmas Stories," which met with great favor as they respectively appeared; "Pictures from Italy," "Dombey and Son," "David Copperfield," "A Child's History of England," "Hard Times," "Bleak House," "Little Dorrit," "A Tale of Two Cities," "Great Expectations," "The Uncommercial Traveler," and "Our Mutual Friend," not to mention farces and some uncollected short stories.

WILLIAM M. THACKERAY

Born 1811.

Died 1863.

Lecturer, Poet and Novelist.

THE AGREEABLE English author of high rank, William M. Thackeray, was born at Calcutta, India, in 1811, while his father was in the service of the East India Company, and was educated in London and Cambridge universities, England. Inheriting about £20,000 in 1832, he traveled in Europe and studied art, remaining abroad for several years. Losing the most of his fortune by speculation, he entered upon a successful literary career, which he continued until the close of his life.

He wrote for *Fraser's Magazine*, under the names of "Michael Angelo Titmarsh" and "George Fitz-Boodle," and to the London *Punch*, in which appeared "Jeames' Diary," "The Fat Contributor," and "The Snob Papers," now found among the later editions of his works. "Vanity Fair," a novel, published as a serial, greatly enhanced his reputation, in 1846–'8.

In 1845 he visited the East. In 1848 he was admitted to the bar, but did not practice. In 1851 he delivered to London audiences his popular lectures of the "English Humorists of the Eighteenth Century;" in 1852 he repeated them to American houses, and in 1855–'6 again delivered them in this country, together with his other course of lectures on "The Four Georges." From 1859 to 1862 he edited the *Cornhill Magazine*, in London, which gained a large circulation under his management.

He died December 24, 1863. His fame rests as much on "Vanity Fair" as on any of his subsequent books, among which the principal are "Pendennis," "Henry Esmond," "The Newcomes," "The Virginians," "Lovel the Widower," "Adventures of Philip," and the "Book of Snobs." His daughter, Anne Isabella, has written and published "The Story of Elizabeth," "The Village on the Cliff," and other books.

The Age of Wisdom.

BY WILLIAM MAKEPEACE THACKERAY.

HO! PRETTY page, with the dimpled chin,
That never has known the barber's shear,
All your wish is woman to win;
This is the way that boys begin—
Wait till you come to forty year.

Curly gold locks cover foolish brains;
Billing and cooing is all your cheer—
Sighing, and singing of midnight strains,
Under Bonnybell's window panes—
Wait till you come to forty year.

Forty times over let Michaelmas speed;
Grizzling hair the brain doth clear;
Then you know a boy is in need
Of much more sense, much more indeed—
Once you have come to forty year

Pledge me round; I bid ye declare,
All good fellows whose beards are gray—
Did not the fairest of the fair
Common grow and wearisome ere
Ever a month was past away?

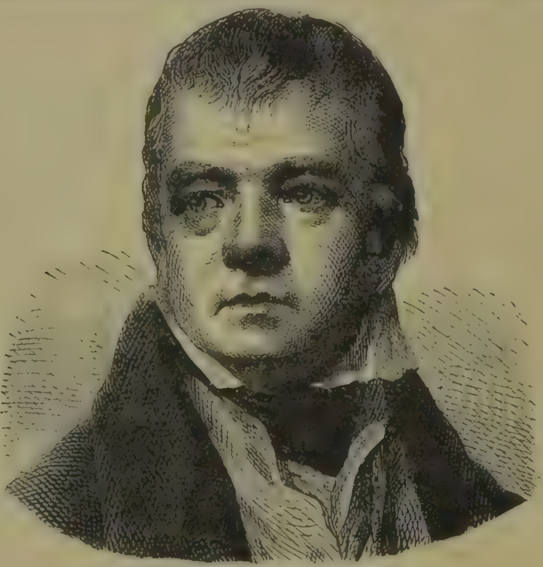
The reddest lips that ever have kissed,
The brightest eyes that ever have shone,
May pray and whisper and we not list,
Or look away and never be missed—
Ere yet ever a month is gone.

Gillian's dead! God rest her bier—
How I loved her twenty years syne!
Marian's married; but I sit here,
Alone and merry at forty year,
Dipping my nose in the Gascon wine.

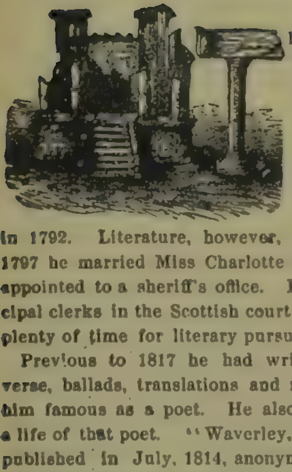
WALTER SCOTT

Born 1771.

Died 1832.



Author of the "Waverley Novels."



THE EMINENT novelist, poet and historian, Sir Walter Scott, was born at Edinburgh, August 15, 1771. He was educated at the high school and university of Edinburgh. In 1786 he entered his father's law office, and was admitted to the practice of the law in 1792. Literature, however, soon engrossed his thoughts. In 1797 he married Miss Charlotte M. Carpenter, and in 1799 he was appointed to a sheriff's office. In 1806 he became one of the principal clerks in the Scottish court of session, with a good salary and plenty of time for literary pursuits.

Previous to 1817 he had written most of the poems, tales in verse, ballads, translations and metrical romances that have made him famous as a poet. He also edited Dryden's works and wrote a life of that poet. "Waverley," his first distinguished novel, was published in July, 1814, anonymously, but paved the way by its literary excellence for the extensive series of "Waverley Novels," on which his reputation is based. In the meantime he had founded and built his castellated mansion of "Abbotsford," to which his literary fame has given a popular interest. In 1815 "Guy Mannering" succeeded "Waverley," and from that period to 1825 he wrote his other novels in rapid succession. Besides these he had written some of his dramas, edited the works of Swift and other authors, contributed to the leading reviews and other periodicals of the day, and wrote several articles for the "Encyclopædia Britannica."

His wealth and popularity made Abbotsford a great resort for visitors of every degree and rank. In 1820 King George IV. conferred upon him a baronetcy. In 1826 he became pecuniarily embarrassed by the failure of his Edinburgh publishers, and another firm, by its failure, also involved his means. He owed the creditors of both houses about £120,000, and at the age of fifty-five years he set about the task of paying off these demands by his literary labor. In 1826 appeared his "Life of Napoleon Bonaparte," and other works well known to his readers, but it was not until 1827 that he acknowledged himself to be the author of "Waverley" and the "Waverley Novels," although he had long been credited with that distinction. He continued to write voluminously, including two series of his "Tales of a Grandfather;" his "History of Scotland," "Letters on Demonology and Witchcraft," and reduced his indebtedness materially.

His health began to fail about 1830, and a hereditary disease manifested itself so severely that literary labor was suspended by medical advice, and he visited Italy in a vessel furnished by the admiralty. Finding himself failing, he desired to be taken home, but was insensible when London was reached in June, 1832, and died at Abbotsford soon after his arrival, Sept. 21 1832. He was buried in Dryburgh Abbey, and a noble Gothic structure, erected at Edinburgh in 1844–'6, perpetuates his memory.

Before his death he had liquidated about one-third of his indebtedness, and the remainder was paid through the sale of the copyrights of the "Waverley Novels."

HYMN OF THE HEBREW MAID.

BY SIR WALTER SCOTT.

WHEN Israel, of the Lord beloved,
  Out from the land of bondage came,
Her father's God before her moved,
  An awful guide in smoke and flame.
By day along the astonished lands
  The cloudy pillar glided slow;
By night Arabia's crimsoned sands
  Returned the fiery column's glow.

There rose the choral hymn of praise,
  And trump and timbrel answered keen;
And Zion's daughters poured their lays,
  With priest's and warrior's voice between.
No portents now our foes amaze—
  Forsaken Israel wanders lone;
Our fathers would not know Thy ways,
  And Thou hast left them to their own.

But, present still, though now unseen,
  When brightly shines the prosperous day,
Be thoughts of Thee a cloudy screen,
  To temper the deceitful ray.
And oh, when stoops on Judah's path
  In shade and storm the frequent night,
Be Thou, long-suffering, slow to wrath,
  A burning and a shining light!

Our harps we left by Babel's streams—
  The Tyrant's jest, the Gentile's scorn;
No censer round our altar beams,
  And mute are timbrel, trump, and horn.
But Thou hast said, the blood of goats,
  The flesh of rams, I will not prize—
A contrite heart, and humble thoughts,
  Are mine accepted sacrifice.

LORD LYTTON.

Born 1805.

Died 1873.

Poet, Novelist and Member of the British Parliament.

THE CELEBRATED English novelist, Edward George Earle Lytton, Baron, was born of an ancient family, in May, 1805.

He was educated by private tutors and at Trinity Hall, Cambridge, where he graduated in 1826. In the meantime he had made pedestrian tours through England and Scotland, and on horseback through a large portion of France. His literary tastes developed at an early age and continued until his death to be manifested in his voluminous writings. He succeeded to the Knebworth estates in 1844; mainly assisted in founding the guild of literature and art; became lord rector of the University of Glasgow in 1856, and again in 1858. He entered parliament in 1831, and again in 1852 and 1857. He was created a baronet in 1838, and in 1858 became secretary of state for the colonies in the cabinet of the earl of Derby, but this office he resigned in 1859. In 1866 he became Baron Lytton and a member of the peerage. He died Jan. 18. 1873. Among his works were the following:

Poems: "Sculpture," "Weeds and Wild Flowers," "O'Neill, or the Rebel," "The New Timon," "King Arthur," "The Odes and Epodes of Horace," "The Siamese Twins," "The Lost Tales of Miletus." Dramas: "The Duchess de La Valliere," The Lady of Lyons," "Richelieu," "Money," "Not so Bad as We Seem." Other works: "Falkland," "Pelham," "The Disowned," "Devereux," "Paul Clifford," "Eugene Aram," "England and the English," "The Student," "The Pilgrims of the Rhine," "The Caxtons," "A Letter to John Bull," "Confessions of a Water Patient," "My Novel," "What will He Do with It?" "The Parisians," "Kenelm Chillingly," and "The Crisis," a political paper.

Lady Bulwer, his wife, also wrote several novels.

CLAUDE MELNOTTE'S APOLOGY AND DEFENSE.

BY LORD EDWARD BULWER-LYTTON.

PAULINE, by pride
Angels have fallen ere thy time; by pride,—
That sole alloy of thy most lovely mould—
The evil spirit of a bitter love'
And a revengeful heart, had power upon thee.
From my first years my soul was filled with thee;
I saw thee midst the flowers the lowly boy
Tended, unmarked by thee,—a spirit of bloom,
And joy and freshness, as spring itself
Were made a living thing and wore thy shape!
I saw thee, and the passionate heart of man
Entered the breast of the wild-dreaming boy;
And from that hour I grew—what to the last
I shall be—thine adorer! Well, this love,
Vain, frantic,—guilty, if thou wilt, became
A fountain of ambition and bright hope;
I thought of tales that by the winter hearth
Old gossips tell,—how maidens sprung from kings
Have stooped from their high sphere; how Love, like Death,
Levels all ranks, and lays the shepherd's crook
Beside the sceptre. Thus I made my home
In the soft palace of a fairy Future!
My father died; and I, the peasant-born,
Was my own lord. Then did I seek to rise
Out of the prison of my mean estate;
And, with such jewels as the exploring mind
Brings from the caves of Knowledge, buy my ransom
From those twin jailers of the daring heart,—
Low birth and iron fortune. Thy bright image,
Glassed in my soul, took all the hues of glory
And lured me on to those inspiring toils
By which man masters men! For thee, I grew
A midnight student o'er the dreams of sages!
For thee, I sought to borrow from each Grace
And every Muse such attributes as lend
Ideal charms to Love. I thought of thee,
And passion taught me poesy,—of thee,
And on the painter's canvas grew the life
Of beauty!—Art became the shadow
Of the dear starlight of thy haunting eyes!
Men called me vain,—some, mad,—I heeded not;
But still toiled on, hoped on,—for it was sweet,
If not to win, to feel more worthy, thee!

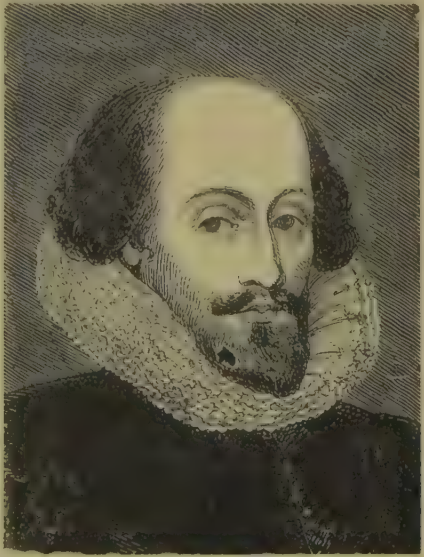
. . . . .

At last, in one mad hour, I dared to pour
The thoughts that burst their channels into song,
And sent them to thee,—such a tribute, lady,
As beauty rarely scorns, even from the meanest
The name—appended by the burning heart
That longed to show its idol what bright things
It had created—yea, the enthusiast's name,
That should have been thy triumph, was thy scorn!
That very hour—when passion, turned to wrath,
Resembled hatred most; when thy disdain
Made my whole soul a chaos—in that hour
The tempters found me a revengeful tool
For their revenge! Thou hadst trampled on the worm
It turned, and stung thee!

William Shakspeare.

Born 1564.

Died 1616.



Life and Works of the Distinguished Dramatist.

ALTHOUGH no exact record of the date of his birth exists, it is supposed that William Shakspeare was born April 26, 1564, his birthplace being Stratford-upon-Avon. He was the third of eight children. His father was a prominent man, at one time, in the town of 1,500 people, being successively, a glover, a butcher, a dealer in wool, and filled in order the offices of constable, alderman, and mayor,—all that, and yet not able to write his own name, which indicated that he was a man of such natural ability as to take high rank, even with no education.

The mother came from an aristocratic family of some note, and with the small estate that she brought her husband, the couple were in well-to-do circumstances, and amid these pleasant surroundings, it is supposed William attended the Stratford grammar school and assisted his father at butchering and wool-buying, and afterwards as an attorney's clerk and schoolmaster.

In the future poet's rovings about the neighborhood, he met Anne Hathaway, whom he married at the age of eighteen, Anne being at the time twenty-six. Five months afterwards she bore him a daughter, and before he was twenty-one, three children were born to him, the last two being twins.

About this time his father's circumstances became embarrassed, and William was compelled to turn his attention to something besides his father's business with which to get a living. The tradition is that having stolen a deer from Sir Thomas Lucy, of Charlecote, near Stratford, he received such persecution as compelled him to leave his native town for the time. Be that as it may, having often witnessed the plays of traveling actors from London in Stratford, and some of his acquaintances being in the metropolis, he engaged in theatrical work. He went to London, and was soon employed as an assistant in general utility work, it is claimed, at the Blackfriars Theater, where he also soon joined a theatrical company.

At that period there was great demand for new plays, and he very soon commenced rearranging and adapting old plays to the stage, succeeding which he began to write plays of his own, which became so popular as to make him, in ten years from the time of his first arrival in London, the most distinguished literary man in Great Britain. For sixteen years, it is said, after he commenced play-writing he frequently took a part in his own plays. He then ceased to go upon the stage, but continued his writing and remained in London, from the time of his first arrival, a period of twenty-four years. At the expiration of this time, with an income of £2,400 a year from his writings, he returned to Stratford, where he wrote three more plays, one of which was the "Tempest."

Shakspeare had, years before, purchased one of the handsomest homes in Stratford for his family, but rumor has it that he was never a husband to his wife after going to London, though he visited Stratford annually. Engaged in a drinking spree with Drayton and Ben Jonson, Shakspeare contracted a fever, from which he died, April 23, 1616, aged fifty-two, leaving a wife who survived him seven years, and two married daughters. One of these, Susanna, the eldest, had married a Dr. Hall, of Stratford, and Judith had wedded Thomas Quincy. His other child, a boy called Hammet, died at the age of eleven.

Shakspeare's remains were buried in the chancel of Trinity Chapel, at Stratford. This church, which contains also the remains of his wife, the monument that stands near it, upon which is a portrait-bust of the poet, the grammar school in which he was educated, and the house where he was born, purchased by the national government at a cost of £4,000, may to-day all be seen by the pilgrim to Stratford. Thousands of the admirers of Shakspeare, from all parts of the world, come here every year, and although three hundred years have gone by since the poet's birth, the centuries seem but to add brilliancy and a halo to his memory.

The great dramatist left to posterity thirty-seven plays, in which were interblended poetry, love, wit, religion, philosophy and knowledge of human nature, in such measure as no one had ever written before, and no one will ever be likely to surpass.

On the following page are given some of the well-known sayings from this famous playwright. It will be seen, from their study, that the fame which Shakspeare has enjoyed for three hundred years, was well and justly merited.

Familiar Quotations from Shakspeare's Writings.

SWEET are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.
And this our life, exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in everything.
As You Like It. Act ii. *Sc.* 1.

As merry as the day is long.
Much Ado About Nothing. Act ii. *Sc.* 1.

Every one can master a grief but he that has it.
Much Ado About Nothing. Act iii. *Sc.* 2.

The man that hath no music in himself,
Nor is not moved with concord of sweet sounds,
Is fit for treasons, stratagems, and spoils:
The motions of his spirit are dull as night,
And his affections dark as Erebus.
Let no such man be trusted.
Merchant of Venice. Act v. *Sc.* 1.

All the world 's a stage
And all the men and women merely players:
They have their exits and their entrances;
And one man in his time plays many parts,—
His Acts being seven ages. At first, the Infant,
Mewling and puking in the nurse's arms.
Then the whining School-boy, with his satchel
And shining morning face, creeping like snail
Unwillingly to school. And then the Lover,
Sighing like furnace, with a woful ballad
Made to his mistress' eyebrow. Then a Soldier,
Full of strange oaths and bearded like the pard;
Jealous in honor, sudden and quick in quarrel,
Seeking the bubble Reputation
Even in the cannon's mouth. And then the Justice,
In fair round belly with good capon lin'd,
With eyes severe and beard of formal cut,
Full of wise saws and modern instances,—
And so he plays his part. The sixth age shifts
Into the lean and slipper'd pantaloon,
With spectacle on nose and pouch on side;
His youthful hose, well sav'd, a world too wide
For his shrunk shank; and his big manly voice,
Turning again toward childish treble, pipes
And whistles in his sound. Last scene of all,
That ends this strange eventful history,
Is second childishness and mere oblivion;
Sans teeth, sans eyes, sans taste, sans—everything.
As You Like It. Act ii. *Sc.* 7.

She never told her love;
But let concealment, like a worm i' the bud,
Feed on her damask cheek: she pined in thought;
And, with a green and yellow melancholy,
She sat, like Patience on a monument,
Smiling at grief.
Twelfth Night. Act ii. *Sc.* 4.

Some are born great, some achieve greatness,
And some have greatness thrust upon them.
Twelfth Night. Act ii. *Sc.* 5.

Thus the whirligig of Time brings in his revenges.
Twelfth Night. Act v. *Sc.* 1.

When Fortune means to men most good,
She looks upon them with a threatening eye.
King John. Act iii. *Sc.* 4.

To gild refined gold, to paint the lily,
To throw a perfume on the violet,
To smooth the ice, or add another hue
Unto the rainbow, or with taper-light
To seek the beauteous eye of heaven to garnish,
Is wasteful and ridiculous excess.
King John. Act iv. *Sc.* 2.

Uneasy lies the head that wears a crown.
King Henry IV., Part II. Act iii. *Sc.* 1.

Smooth runs the water where the brook is deep.
King Henry VI., Part II. Act iii. *Sc.* 1.

The smallest worm will turn, being trodden on.
King Henry VI., Part III. Act ii. *Sc.* 2.

So wise so young, they say, do ne'er live long.
King Richard III. Act iii. *Sc.* 1.

A horse! a horse! My kingdom for a horse!
King Richard III. Act v. *Sc.* 4.

Farewell, a long farewell to all my greatness!
This is the state of man: to-day he puts forth
The tender leaves of hope, to-morrow blossoms,
And bears his blushing honors thick upon him:
The third day comes a frost, a killing frost.
King Henry VIII. Act iii. *Sc.* 2.

What 's in a name? that which we call a rose
By any other name would smell as sweet.
Romeo and Juliet. Act ii. *Sc.* 2.

For nought so vile that on the earth doth live,
But to the earth some special good doth give;
Nor aught so good, but, strain'd from that fair use,
Revolts from true birth, stumbling on abuse:
Virtue itself turns vice, being misapplied,
And vice sometime 's by action dignified.
Romeo and Juliet. Act ii. *Sc.* 3.

Romans, countrymen, and lovers! hear me for my cause; and be silent that you may hear.
Julius Cæsar. Act iii. *Sc.* 2.

Not that I loved Cæsar less, but that I loved Rome more.
Julius Cæsar. Act iii. *Sc.* 2.

But yesterday, the word of Cæsar might
Have stood against the world: now lies he there,
And none so poor to do him reverence.
Julius Cæsar. Act iii. *Sc.* 2.

There is a tide in the affairs of men,
Which, taken at the flood, leads on to fortune:
Omitted, all the voyage of their life
Is bound in shallows and in miseries.
Julius Cæsar. Act iv. *Sc.* 3.

His life was gentle; and the elements
So mix'd in him, that Nature might stand up
And say to all the world, "This is a man!"
Julius Cæsar. Act v. *Sc.* 5.

To-morrow, and to-morrow, and to-morrow,
Creeps in this petty pace from day to day,
To the last syllable of recorded time;
And all our yesterdays have lighted fools
The way to dusty death. Out, out, brief candle!
Life 's but a walking shadow; a poor player,
That struts and frets his hour upon the stage,
And then is heard no more: it is a tale
Told by an idiot, full of sound and fury,
Signifying nothing.
Macbeth. Act v. *Sc.* 5.

Frailty, thy name is woman!
Hamlet. Act i. *Sc.* 2.

He was a man, take him for all in all,
I shall not look upon his like again.
Hamlet. Act i. Sc. 2.

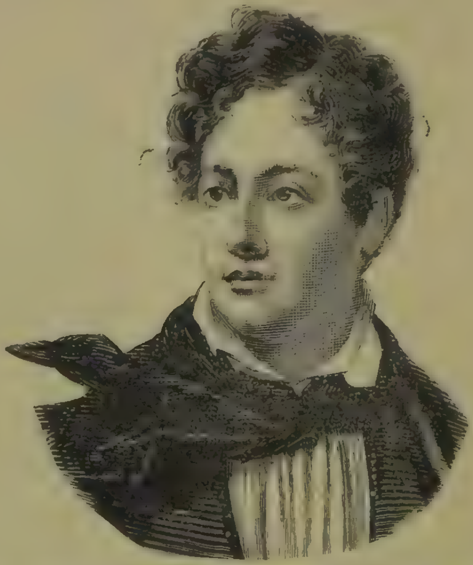
A countenance more
In sorrow than in anger.
Hamlet. Act i. *Sc.* 2.

Let the galled jade wince, our withers are unwrung.
Hamlet. Act iii. *Sc.* 2.

There 's a divinity that shapes our ends,
Rough-hew them how we will.
Hamlet. Act v *Sc.* 2.

Have you not heard it said full oft,
A woman's nay doth stand for naught?
Ibid. xiv.

LORD BYRON



Born 1788.

Died 1824.

Author of "Childe Harold," "Siege of Corinth," "Mazeppa," "The Prisoner of Chillon," "Don Juan," "The Orient," "Song of the Greek Poet," "To Thomas Moore," "Destruction of the Sennacherib," "The Coliseum," "Maid of Athens, Ere We Part," "Napoleon," etc.

HAT THE peculiarities and eccentricities of a parent will be transmitted to children is abundantly verified in the Byron family. John Byron was a reckless, dissipated captain in the guards; whose first prominent escapade was to elope, at the age of twenty-three, with the wife of a marquis, the couple taking up their residence in France, where the wife died in 1784, leaving a daughter—Augusta—who afterwards became Mrs. Leigh. Two years later, the fortune of the first wife being squandered, John made the acquaintance of Catherine Gordon, a Scotch girl, who was reputed to be worth £50,000. Byron openly boasted of his intention to marry her for the purpose of obtaining the money with which to pay his debts, and he carried out his purpose. This marriage was very satisfactory to Byron's creditors, who came upon the estate before the honeymoon was over. First went the ready money, £3,000; next, £1.000 in bank and other stock; then £9,000 worth of timber was cut and sold from the estate. Then the property was mortgaged for £4,800, and all the money thus raised was spent in paying the debts of the spendthrift.

First settling in England, where the property was squandered, the wife afterwards went to Aberdeen to live on the income of £2,000 that had been settled upon her at marriage, which amount the husband could not obtain. When everything else had been wasted, to even the interest on this last amount, the husband followed her from England and borrowed all he could get, and then abandoned her and their child, a boy then three years old, and started for Paris, but died before reaching there. With all the meanness of the man, his wife loved him devotedly and her shrieks were of the most violent kind when the news came of his death.

Such was the parentage of the poet, Byron. The father was a wild, reckless, passionate spendthrift. The mother was irrational and emotional; sometimes storming with anger, and again overflowing in her heart with love. What wonder that the future Byron should have possessed those traits of character that poisoned his morals and shadowed the purity of his social existence. It was as natural that his domestic life should be darkened and cursed as that thistles shall grow where the seed of thistle is sown. It will be seen in these biographies of great lives that while training has done much, a smoothly, evenly-rounded, successful life is almost invariably preceded by an intellectual, moral, well balanced, superior parentage.

George Gordon Byron, the subject of our sketch, was born in London, January 22, 1788. It was while living with his mother in Aberdeen, in 1798, that the news came of the death of his great uncle, William Lord Byron, of Rochdale, and Newstead Abbey, who had died without direct heirs, and George Gordon succeeded to the title and the wealth which he left. The future poet was then ten years old,—a bashful, imaginative boy, who was very sensitive because of lameness,—a trouble that had afflicted him from birth, at which time the bones of his right foot had been misplaced.

The widow and her son removed to the Abbey, and from there he was sent to a school at Dulwich. Two years afterwards he was transferred to Harrow school, where he remained five years, proving a careless student but a great reader of fiction and history. He was ambitious to excel in athletic sports, and became an expert swimmer and boxer. His poetic temperament and amative, passionate nature predisposed him to fall in love, and three times before he was fifteen, it is averred, he was madly infatuated with as many girls.

It was during a few weeks' vacation when sixteen years old, that he made the acquaintance of Mary Anne Chaworth, whom he loved most devotedly. Two years his senior, she married soon afterwards, the news of which nearly threw him into convulsions. Byron in after years claimed that this boyish passion was the turning-point of his life.

His youthful training was as unfortunate as were the mental characteristics which he inherited. His mother would at times indulge in fits of rage toward him and taunt him as a "lame brat;" again she would indulge him in any whim, caress and praise him for his bright eyes. Thus, with a bad mental organization to commence with, an unfortunate training in his youth, petted and humored for the sake of his title, the wonder is that there was any good left in him.

He went to Trinity College, Cambridge, in 1805, and the next year appeared a small volume of his poems, which, along with other verses, were issued in 1807 under the title, "Hours of Idleness." This volume was severely criticised by the *Edinburgh Review*, and Byron retorted by a satire, published in 1807, entitled "English Bards and Scotch Reviewers."

On coming of age, in 1809, Byron was in debt £10,000, to incur which he had run a course of youthful dissipation that impaired his health. This, with the limited income from his estate, made him resolve to leave England for a journey to the East, where a portion of his time was spent in Greece. Here he wrote, "Hints from Horace," "The Curse of Minerva," and the first and second cantos of "Childe Harold."

Returning to England, Byron showed these poems to a relative, who urged their publication, many of the weakest passages being stricken from them, and the strongest and best being added as they were passing through the press.

Hucknall Church, where Byron was Buried.

The want of affection between Byron and his mother, was shown in the fact that though absent from England two years, Byron did not go to see her upon his return, her last imprecation upon him, when he left home two years before, being a hope that he would become as deformed in mind as he was in body. Soon after his return, she died from the effects of a fit of rage, brought on through a quarrel with a tradesman.

"Childe Harold" came from the press, and was at once a success. Through it he may be said to have attained the highest literary reputation of any man of his age. He had, in the meantime, also, made two or three speeches in the House of Peers, of which he was a member by virtue of his rank. His prolific pen caused to follow, in rapid succession, about this time, the "Giaour," "Bride of Abydos," "Corsair" and, lastly, "Lara," which appeared in 1813.

In spite of dissipation and the fates which had been so terribly against him, Byron was at this period, undoubtedly, the most popular literary man in Europe. He had developed into a fine personal appearance, having only a slight limp as he walked; he was regarded as a talented member of the House of Lords, and he was an author of acknowledged superior genius. Byron could, had he chosen, have been pecuniarily independent from that time forward.

His only near relative was his half-sister, Augusta, who had been reared by her grandmother, the Countess of Holderness. He had no dependents upon him, and yet his loves with women of questionable character, and his spendthrift habits, kept him poor and in debt.

About this time he sold his estate for £140,000, of which sum £20,000 was paid at time of purchase, which was to be forfeited if the remainder was not forthcoming. No more was paid, and Byron used the sum thus furnished in part liquidation of his obligations, but after all was exhausted, he was yet overwhelmed with debt.

His friends advised him to marry, and he listened to the suggestion. He had before been impressed with the beauty and modesty of Miss Anne Isabella Milbanke. Her father was a baronet, with large estates, and she was the prospective heiress to an estate of an uncle, which yielded an income of £8,000 a year. Byron proposed to her and was refused. At the suggestion of a friend he proposed to another heiress, and was rejected; whereupon he reopened correspondence with Miss Milbanke, and was finally accepted, the marriage taking place January 2, 1815, Byron being then twenty-seven years old, and his wife four years younger.

During the succeeding year he wrote the "Siege of Corinth," "Parisina," and other smaller poems. During the year, also, his creditors, understanding that he had married a rich heiress, pressed their claims, and his wife's fortune rapidly melted away; several executions were placed upon his house, and he escaped personal arrest only by virtue of being a member of the House of Peers. At the end of a year, a child was born to Byron and his wife, known in his verse as "Ada, sole daughter of my home and heart." The mother had no sooner risen from childbed than Byron insisted upon her returning to her father's house, which she did, and soon after a formal separation took place, the grounds of complaint being harshness and cruelty on the part of the husband, though flagrant infidelity on his part was suspected, among his amours being incestuous intercourse with his half-sister, Mrs. Leigh, then a married woman and the mother of four children.

Public sentiment turned upon Byron as soon as the separation from his wife became known. He was now as unpopular as he had before been famous, and to escape the lashings of the press and his enemies, he left England, went to Brussels, and thence up the Rhine to Switzerland, traveling in state in a carriage fitted up with bed, library, etc., having with him a physician and three servants.

At Geneva he met a young woman by whom he had a daughter, born nine months afterwards. This child was sent to him, at Venice, when it was twenty months old. Named Allegra, she died when five years of age.

In Switzerland he wrote the third canto of "Childe Harold," the

"Prisoner of Chillon," several smaller poems, and outlined the novel, subsequently published, called "The Vampire."

From Switzerland he went to Venice, where he hired a palace, fitted up a harem, filled with a low class of Venetian women, and remained here three years, during which time he wrote "Manfred," "The Lament of Tasso," "Beppo," "Ode on Venice," "Mazeppa," the fourth canto of "Childe Harold," and four cantos of "Don Juan," with many smaller poems.

In 1819 he met the Countess Teresa Guiccioli, a young lady then but sixteen years of age, who had recently become the third wife of Count Guiccioli, a wealthy nobleman, then sixty years old. Byron and the countess fell in love with each other at first sight, and the result was that Byron disbanded his harem and attached himself to her. Afterwards, when the husband took his young wife to Ravenna, she fell sick, and, as a last resort, the father, brother, and husband urged Byron to go and visit her, which he did; and taking up his residence in the husband's home, remained there two years, the openly recognized lover of the countess. During this time he wrote "Marino Faliero," "Sardanapalus," "The Two Foscari," "Cain," "The Vision of Judgment," "Heaven and Earth," "The Prophecy of Dante," the fifth canto of "Don Juan," made some translations, and commenced "Werner" and "The Deformed Transformed."

The Destruction of Sennacherib.

BY LORD BYRON.

THE Assyrian came down like a wolf on the fold,
And his cohorts were gleaming in purple and gold;
And the sheen of their spears was like stars on the sea,
When the blue wave rolls nightly on deep Galilee.

Like the leaves of the forest when summer is green,
That host with their banners at sunset were seen;
Like the leaves of the forest when autumn hath flown,
That host on the morrow lay withered and strown.

For the angel of death spread his wings on the blast,
And breathed in the face of the foe as he passed;
And the eyes of the sleepers waxed deadly and chill,
And their hearts but once heaved and forever grew still!

And there lay the steed with his nostril all wide,
But through it there rolled not the breath of his pride;
And the foam of his gasping lay white on the turf,
And cold as the spray of the rock-beating surf.

And there lay the rider distorted and pale,
With the dew on his brow and the rust on his mail;
And the tents were all silent, the banners alone,
The lances uplifted, the trumpets unblown.

And the widows of Ashur are loud in their wail;
And the idols are broke in the temple of Baal;
And the might of the Gentile, unsmote by the sword,
Hath melted like snow in the glance of the Lord!

The count, it appears, at last objected to the relations existing between Byron and his wife, which resulted in a separation between the countess and himself; but after Byron's death, in 1824, they became reconciled, and she received an annuity from his estate. In 1851 she married the French Marquis de Boissy, who used to refer to her as "My wife, formerly mistress of Lord Byron." Her husband died in 1866. In 1868 she published in French, afterwards translated into English, a work entitled, "My Recollections of Lord Byron."

In 1821 the poet had become rich. His works were having a large sale. He had sold his estates for cash, and a portion of his wife's inheritance, settled upon him at marriage, had come into his hands.

At this time Byron and the Countess Guiccioli took up their abode for nine months in Pisa, Italy, going thence to Genoa. In this period he finished "Werner," and "The Deformed Transformed," wrote "The Age of Bronze," "The Island," and the last cantos of "Don Juan" that were published. The countess claimed that he wrote five more cantos, in which he brought the poem to a happy conclusion. He also wrote his memoir, the manuscript of which he presented to Moore, who sold it to Murray for £2,000, the condition being that it should not be published until after the poet's death.

Byron was now thirty-six years old. He had been rich, and poor, and rich, in turn. He had lived the life of a profligate; had been famous, and infamous, and famous again; he had wasted his health with intemperance, and had partially recovered it. He had done an immense work as an author, from which literary labor he now concluded to rest. It was at this period that he began to turn his attention to political matters, feeling that the time had come for him to verify the assertion, made years before, that he would some day do something besides writing poetry.

The Greeks had risen against the Turks. Byron resolved to cast his fortunes with Greece in her struggle for independence. He furnished some money, and in January, 1824, he joined the ranks of the Grecian soldiery, and was appointed commander-in-chief of an expedition intended to be sent against Lepanto. He left Genoa and sailed for the Greek islands, making his headquarters at Missolonghi, and on the 22d of January, 1824, he wrote his last poem, entitled, "On Completing My Thirty-sixth Year." On April 15, he was seized with a convulsive fit, from which he died four days afterwards, while vainly endeavoring to give a direction, in which were articulated the names of his wife, daughter and sister. The countess was at this time in Genoa.

His death was most sincerely mourned by the Greeks for a period of twenty-one days. His body was embalmed and sent to England, where it was interred in the tomb of his ancestors, at Hucknall, near Newstead Abbey.

By will he left his fortune to his sister, Mrs. Leigh. Much of the memoir which he wrote Moore destroyed just before the work appeared in public print, it is said, at the instigation of Lady Byron; a record of what might have been of considerable interest to the world, was thus denied to those who, through this memoir, would doubtless have known much more of the inner existence of this eccentric character.

Such was the short life of the sensitive, erratic, fickle, weak and talented Byron. As a poet, he is claimed by some to stand at the very head in English verse; others place him second only to Homer, Shakespeare and Dante. It is certain that he occupies a place in the foremost rank as a descriptive writer, as shown in the third and fourth cantos of "Childe Harold," while in "Don Juan," his blending of pathos, scorn, wit, humor, gloom and vivacity, is of the very highest order.

His powers of description are shown in the poem on this page entitled "The Destruction of Sennacherib," every line of which, it will be seen, so vividly illustrates that which is described as to enable the reader very plainly to behold the scene.

Owing to the varied feelings of the people concerning the blame attaching to him, when parentage and youthful training are considered, the merits of his writings have been exalted or undervalued from time to time. The opinion prevails, however, that his place in literary merit is among the very highest of the English poets.

JOHN MILTON.

Born 1608.

Died 1674.

LONDON was the birthplace, Dec. 9, 1608, of John Milton, one of the most sedate of British poets. He was educated at St. Paul's school and Christ's college at Cambridge, and then spent five years in studious retirement in his father's house at Horton, England. It was during this period that he produced his "Comus," "Lycidas," and some other poems.

Going to France in 1638, he spent fifteen months there and in Italy. On his return to England, he opened an academy in London, and took part in the current controversies of his day. He was married in 1643, and within a month his wife deserted him, going home to her parents; but a reconciliation ensued, and she, with her father and brothers, took up her residence in his house. After her death he married again, and subsequently, being widowed, he married a third wife. His political work on the tenure of kings and magistrates, in which he vindicated the execution of Charles I., induced the council of state to appoint him Latin secretary. He then published two other political books, in the writing of which he lost his eyesight.

After the restoration of the kingly government of England, he spent the remainder of his life in retirement, during which period he composed his "Paradise Lost." This was published in 1667, and brought him as a remuneration about £5 for the first edition, with a promise of about £10 more if two other editions should be sold. Later in life he produced his "Paradise Regained," "Samson Agonistes," and the "History of Britain." He died Nov. 8, 1674.

Poems by Milton.

To the Nightingale.

O NIGHTINGALE, that on yon bloomy spray
Warblest at eve, when all the woods are still,
Thou with fresh hope the lover's heart dost fill,
While the jolly hours lead on propitious May.
Thy liquid notes that close the eye of day,
First heard before the shallow cuckoo's bill,
Portend success in love. Oh, if Jove's will
Have linked that amorous power to thy soft lay,
Now timely sing, ere the rude bird of hate
Foretell my hopeless doom in some grove nigh;
As thou from year to year hast sung too late
For my relief, yet hadst no reason why.
Whether the Muse or Love call thee his mate,
Both them I serve, and of their train am I.

From "Comus."

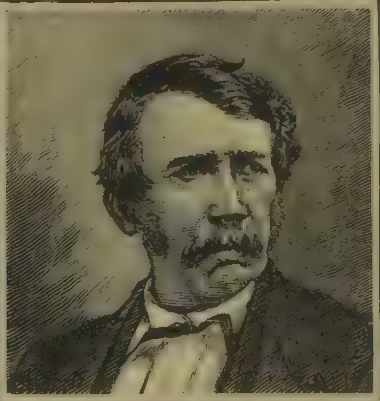
He that has light within his own clear breast
May sit in the centre and enjoy bright day;
But he that hides a dark soul and foul thoughts
Benighted walks under the midday sun.

Eve's Lament on Leaving Paradise.

O UNEXPECTED stroke, worse than of death!
Must I thus leave thee, Paradise? thus leave
Thee, native soil! these happy walks and shades,
Fit haunt of Gods? where I had hoped to spend,
Quiet though sad, the respite of that day
That must be mortal to us both. O, flowers
That never will in other climate grow,
My early visitation and my last
At even, which I bred up with tender hand
From the first spring bud, and gave ye names!
Who now shall rear thee to the sun, or rank
Your tribes, and water from the ambrosial fount?
Thee lastly, nuptial bower, by me adorn'd
By what to sight or smell was sweet! from thee
How shall I part, and whither wander down
Into a lower world, to this obscure
And wild? How shall we breathe in other air
Less pure, accustomed to immortal fruits?

—*Paradise Lost.*

David Livingstone.



The Distinguished African Explorer.

DAVID LIVINGSTONE, famous as the British traveler and explorer in Africa, was born at Blantyre, near Glasgow, Scotland, on the 19th of March, 1813. He received a limited education as he labored in the cotton mills, and afterwards widened his educational experience by a study of medicine and theology at Glasgow. Being a rigid Presbyterian and strongly religiously inclined, he resolved upon entering missionary work in Africa. Offering his services to the London Missionary Society, they were accepted, and, later, being ordained, he left England, in 1840, for Port Natal. Here he married, and soon afterwards located about 600 miles to the northeast of Cape Town, South Africa. In this vicinity he labored as a missionary and teacher during the succeeding nine years, in the meantime transmitting to England much valuable geographical and scientific information concerning the country.

In 1849 he made a journey in search of lake Ngami, which he found. Having acquired a fondness for exploration, he sent his family to England, in 1852, and commenced a long voyage of exploration, which continued four years, in which he passed from the West coast of Africa by lake Ngami to the river Zambesi, which he followed to its mouth, the whole reaching over an estimated distance of 11,000 miles.

Returning to England, in 1856, he was received with distinguished honors. In 1857 his first work was published under the title of "Missionary Travels and Researches in South Africa."

He returned to Southern Africa in 1858. Starting from Quilimane, he ascended the Zambesi river a few hundred miles, and thence went northward and discovered, in September, 1859, lake Nyassa. Sustained by government aid and private subscriptions, he continued his explorations, for five years, over a range of several hundred miles about the headwaters of the Zambesi. It was during this journey that Mrs. Livingstone, who had accompanied her husband, died at Shupanga, April 27, 1862. He went to England, in 1864, and again issued a volume relative to the explorations of the Zambesi and its tributaries.

He returned to the scene of his labors in 1865, and the only intelligence from him for two years was the report that he had been killed by the natives in the vicinity of lake Nyassa. A variety of opinions existed as to the truth of this rumor, and the subject excited much comment in the papers throughout the world. In 1868 letters were received from Livingstone, clearly proving that he was alive, and stating that he was in good health. He was then several hundred miles westward of lake Nyassa, engaged in the effort to discover the source of the Nile. Again was he heard from, this time at Ujiji, his letter being dated May 13, 1869.

Then came another long silence for two years, in which rumors were current again that he was dead. To ascertain the truth or falsity of this report, the New York *Herald* sent Henry M. Stanley as a correspondent to Africa, his especial mission being to find Livingstone. In this he was successful, the lost explorer being found at Ujiji, in the fall of 1871, alive and well.

Livingstone and Stanley together explored and satisfied themselves that lake Tanganyika had no communication with the Nile. Remaining about six months, Stanley left Livingstone at Unyanyembe, in March, 1872, and returned to England. It was then Livingstone's intention to remain one or two years longer, and afterwards go to England for permanent settlement. Receiving men and supplies from Zanzibar, he started on an expedition to explore the lake Bangweolo and the reported headwaters of the Congo; but no communication was afterwards received from him.

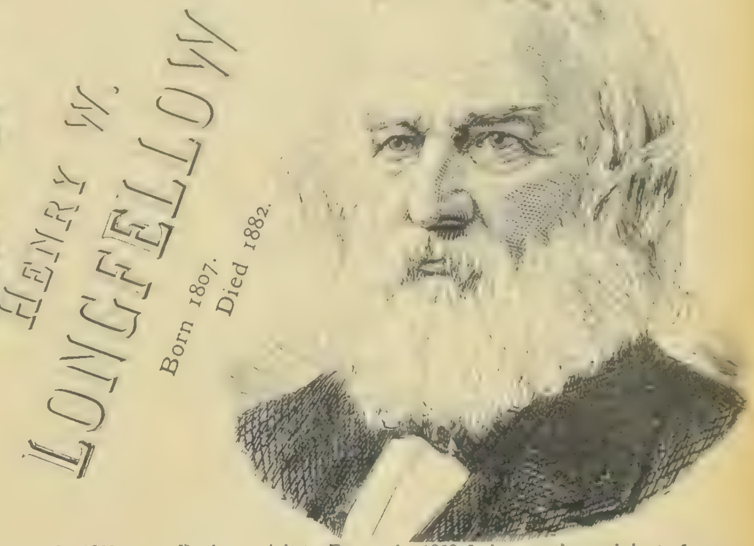
Stanley's return to England aroused the Royal Geographical Society to send an expedition to assist Livingstone, under the command of Lieutenant Cameron. This party left Zanzibar for the interior in the spring of 1873, but had reached no further than Unyanyembe when intelligence was received, August 4, of the explorer's death, the circumstances of which were that, being compelled to cross a wet and swampy country, the hardships had been such as to cause the death of several of the exploring party. Livingstone himself had been taken with the dysentery, and had died May 4, 1873.

Embalming the body of the leader as best they could, the survivors of the party, numbering seventy-nine, had resolved upon carrying it to Zanzibar. Arriving at Unyanyembe in a famished condition, they received assistance from the Cameron party, and thence the body was taken to Zanzibar, from which point, by government vessel, it was transported to England, where, with distinguished honors, it was buried in Westminster Abbey, April 18, 1874.

Livingstone was the recipient of many medals and other tokens from various learned societies, in appreciation of a life devoted to research, exploration, and important discovery in a dangerous country, hitherto unknown to civilization

Home of Longfellow, Cambridge, Mass.

Author of "Hiawatha," "Psalm of Life," "The Village Blacksmith," etc.



THE POET Longfellow was born February 27, 1807, at Portland, Me. He entered Bowdoin college at fourteen, and graduated three years afterwards.

Appointed to the professorship of modern languages in the college where he was educated, he spent three years and a half in visiting and residing in France, Spain, Italy, Germany, Holland and England. Returning in 1831, he married and commenced his labors.

Tendered the professorship of modern languages and *belles-lettres* in Harvard college, in 1835, he again visited Europe, spending some time in Denmark, Sweden and Germany, in which latter country his wife died. He returned to the United States, entered upon his duties at Harvard, and took up his residence at Cambridge, Mass., in 1836, where he has since dwelt, holding his professorship at Harvard for seventeen years.

During a visit to Europe in 1868–9 he was the recipient of many honors, especially wherever the English language is spoken, he being one of the best known abroad of American poets. In England, Oxford University conferred upon him the degree of D. C. L., that of LL. D. having ten years before been given him by Harvard college, in America.

He has edited several fine collections of poems; he has performed a great deal of labor in translations, being singularly fortunate in the ability to impart the spirit and idea of the original into the English, and he is himself one of the most prolific and charming of the writers of poetry, his effusions having frequently and numerously appeared since 1825. Died, March 24, 1882.

How plainly we see the village blacksmith in the following. "children coming home from school, look in at the open door."

The Village Blacksmith.

BY HENRY W. LONGFELLOW.

UNDER a spreading chestnut tree
The village smithy stands:
The smith—a mighty man is he,
With large and sinewy hands;
And the muscles of his brawny arms
Are strong as iron bands.

His hair is crisp, and black, and long;
His face is like the tan;
His brow is wet with honest sweat—
He earns whate'er he can;
And looks the whole world in the face,
For he owes not any man.

Week in, week out, from morn till night,
You can hear his bellows blow;
You can hear him swing his heavy sledge,
With measured beat and slow—
Like a sexton ringing the village bell,
When the evening sun is low.

And children, coming home from school
Look in at the open door;
They love to see the flaming forge,
And hear the bellows roar,
And catch the burning sparks, that fly
Like chaff from a threshing floor.

He goes on Sunday to the church,
And sits among his boys;
He hears the parson pray and preach—
He hears his daughter's voice,
Singing in the village choir,
And it makes his heart rejoice.

It sounds to him like her mother's voice,
Singing in Paradise!
He needs must think of her once more,
How in the grave she lies;
And with his hard, rough hand he wipes
A tear out of his eyes.

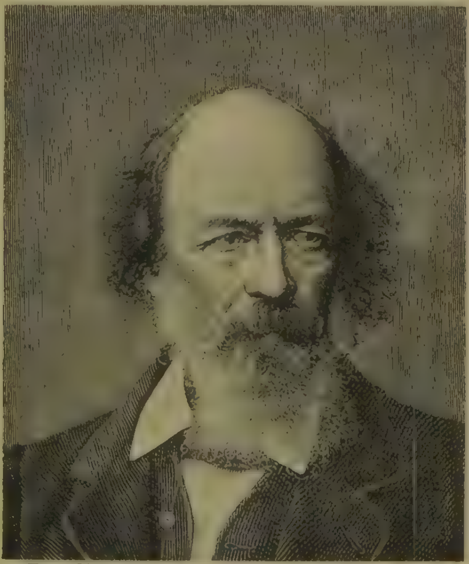
Toiling, rejoicing, sorrowing—
Onward through life he goes;
Each morning sees some task begin,
Each evening sees it close—
Something attempted, something done,
Has earned a night's repose.

Thanks, thanks to thee, my worthy friend,
For the lesson thou hast taught!
Thus at the flaming forge of life
Our fortunes must be wrought—
Thus on its sounding anvil shaped
Each burning deed and thought!

LORD TENNYSON.

Born 1809.

Died 1894.



From Photo. by BARRAUD & Co., *Oxford Street, W.*

ALFRED TENNYSON, the English poet, author of "Enoch Arden," and other poems, was born at Somersby, England, in 1809. His mother was the daughter of a vicar, and his father, the Rev. George Clayton Tennyson, was the rector of Somersby and the vicar of Bennington and Grimsby.

With such a parentage, it was very natural that our future poet, who was the third of twelve children, should have good schooling in his childhood, and that he should afterwards have the advantage of a liberal education, which was accorded at Trinity college, where he gained the Chancellor's medal for a poem in blank verse, entitled "Timbuctoo." With his brother Charles, who was also a poet, and who became vicar at Grasby, he published a small volume of verses when he was eighteen years old, entitled "Poems, by Two Brothers." Six years later, in 1833, appeared a volume of his poems, in which were "The Lady of Shalott," "The May Queen," "A Dream of Fair Women," and "The Lotos-Eaters."

"English Idyls, and Other Poems," in two volumes, which appeared in 1842, brought the author forward to the front rank as a poet. Among this collection were "Locksley Hall," "The Talking Oak," "The Day-Dream," "The Two Voices," and "Ulysses." Following these came other popular effusions from his pen, which secured him the appointment as poet laureate on the death of Wordsworth, in 1850.

"Enoch Arden and Other Poems," which were issued in 1864, included "Sea-Dreams, an Idyl," about which there was nothing noteworthy, save that Tennyson had received £10 a line for it when it had originally appeared in *Macmillan's Magazine.* "Enoch Arden," which was the principal article in this volume, became one of the most popular of Tennyson's later poems.

He lived many years in London, but after his marriage, in 1851, he took up his residence at Farringford, Isle of Wight.

SONG OF THE BROOK.

BY ALFRED TENNYSON.

I COME from haunts of coot and hern,
I make a sudden sally,
And sparkle out among the fern,
To bicker down a valley.

BY thirty hills I hurry down,
Or slip between the ridges;
By twenty thorps, a little town,
And half a hundred bridges.

TILL last by Philip's farm I flow
To join the brimming river;
For men may come and men may go,
But I go on for ever.

WITH many a curve my banks I fret
By many a field and fallow,
And many a fairy foreland set
With willow-weed and mallow.

I CHATTER, chatter, as I flow
To join the brimming river;
For men may come and men may go,
But I go on for ever.

I WIND about, and in and out,
With here a blossom sailing,
And here and there a lusty trout,
And here and there a grayling;

AND here and there a foamy flake
Upon me, as I travel,
With many a silvery waterbreak
Above the golden gravel;

AND draw them all along, and flow
To join the brimming river;
For men may come and men may go,
But I go on for ever.

I STEAL by lawns and grassy plots;
I slide by hazel covers;
I move the sweet forget-me-nots
That grow for happy lovers.

I SLIP, I slide, I gloom, I glance,
Among my skimming swallows;
I make the netted sunbeam dance
Against my sandy shallows.

I MURMUR under moon and stars
In brambly wildernesses;
I linger by my shingly bars;
I loiter round my cresses;

AND out again I curve and flow
To join the brimming river;
For men may come and men may go,
But I go on for ever.

ROBERT BURNS.

Born 1759.

Died 1796.

The Genial Farmer-Boy and Famous Scottish Bard.

ONE OF THE sweetest writers of verse was Robert Burns, who was born near Ayr, in Scotland, January 25, 1759. Though of humble birth, and reared on a farm, he drank of the poetic from every bud and blossom. Genial, generous and loving, his overflow of spirits sought outlet in tippling, love-making, rhyme and metre, in the intervals as he followed the plow.

In addition to the rudiments of an education, he had a little library, stocked with the Bible, Mason's Collection of Prose and Verse, Shakspeare, Pope, and others.

His first poetry began to appear in his sixteenth year, and from that time forward his verses found favor. When nineteen years old, he had published "The Dirge of Winter," "The Death of Poor Maillie," "Maillie's Elegy," and "John Barleycorn." Two years afterwards, while struggling with his brother Gilbert on a little farm at Mossgiel to support his parents, he wrote, "The Holy Tailzie," "Holy Willie's Prayer," "The Ordination," "The Holy Fair," and other satires upon the churchmen of that period. About this time, also, appeared, "To a Mountain Daisy," "Man was Made to Mourn," and "The Cotter's Saturday Night," besides many love-songs to the country girls whom he met from time to time.

When twenty-seven years old he was a poet of considerable reputation; a most genial fellow with his companions, but with no money. In addition to this, he had had illicit intercourse with Jean Armour, who had borne him twins, and by her relatives he had been prosecuted for their support. It was at this time that he had resolved to go to Jamaica and improve, if possible, his pecuniary condition. To get the means with which to go, he concluded to issue a volume of his poems. Of these, 600 copies were published, and from their sale he realized £20, with which he arranged to leave the country

As he was upon the verge of going, a letter was received by a friend of Burns, recommending that he come to Edinburgh, where the people were loud in their praise of his poems. He accepted the invitation, and in the metropolis was the literary lion of the year. Twelve months afterwards he returned with £500, the proceeds of his sale of books, with which he stocked a farm at Ellisland, and, in 1788, married Jean Armour.

He was appointed a collector of excise at a salary of £70 a year, and the hope was that this, with the returns from the farm, would yield the family a support; but the convivial habits of the poet drew so heavily on his revenues as to compel him to relinquish the farm. Retiring to a small house in Dumfries, he meagerly supported his family by his salary and occasional contributions to various publications; but such had been the inroads on his health by intemperance and exposure, together with disappointment in not getting better office, as to cause his early demise, July 21, 1796. At that time the lofty sentiment, the pathos, the hatred of cant and the liberty of thought which pervaded the poems of Burns, had not been appreciated. As the decades went by, however, the world at last learned to do him honor.

Some time since, Robert G. Ingersoll, the distinguished orator, visited Scotland and the childhood home of the poet. As he surveyed the interior of the little cottage near Ayr, where Burns was born, he indited the following graceful tribute to the famous poet:

The Birthplace of Burns.

BY ROBERT G. INGERSOLL.

THOUGH Scotland boasts a thousand names
Of patriot, king and peer,
The noblest, grandest of them all,
Was loved and cradled here.
Here lived the gentle peasant-prince,
The loving cotter-king;
Compared with him the greatest lord
Is but a titled thing

'Tis but a cot roofed in with straw,
A hovel made of clay,
One door shuts out the snow and storm,
One window greets the day.
And yet I stand within this room
And hold all thrones to scorn,
For here, beneath this lowly thatch,
Love's sweetest bard was born.

Within this hallowed hut I feel
Like one who clasps a shrine,
When the glad lips at last have touched
The something seemed divine.
And here the world, through all the years,
As long as day returns,
The tribute of its love and tears
Will pay to Robert Burns.

During his last sickness the people thronged his humble dwelling, and rich and poor, who had learned to love the genial poet, in a multitude attended his funeral. Seventeen years afterwards, a monument was erected to his memory at Dumfries, and at the centenary of his birth-day, in 1859, the people in many parts of the civilized world paid tribute to his genial nature and his talent.

Burns left four sons, one of whom, William, a colonel in the service, purchased the house where his father died, and there his mother lived until her death, in 1834. By the provisions of William's will, the house and garden were left for the use of the Dumfries Education Society, upon a payment of an annuity to certain relatives of the poet during their life-time, with the further provision that the house should thereafter be kept in repair.

The poetry of Burns, full of passion, pathos, wit, and fidelity to nature, appeals directly to the heart, and will ever hold a prominent place among the sweet songs of the English language.

HIGHLAND MARY.

BY ROBERT BURNS.

Ye banks, and braes, and streams around
  The castle o' Montgomery,
Green be your woods, and fair your flowers,
  Your waters never drumlie!
There simmer first unfald her robes
  And there she langest tarry!
For there I took the last fareweel
  O' my sweet Highland Mary.

How sweetly bloomed the gay green birk!
  How rich the hawthorn's blossom!
As underneath their fragrant shade
  I clasped her to my bosom!
The golden hours, on angel wings,
  Flew o'er me and my dearie;
For dear to me as light and life
  Was my sweet Highland Mary.

Wi' monie a vow and locked embrace
  Our parting was fu' tender;
And pledging aft to meet again,
  We tore ourselves asunder;
But, oh! fell death's untimely frost,
  That nipt my flower sae early!
Now green 's the sod, and cauld 's the clay,
  That wraps my Highland Mary!

Oh pale, pale now, those rosy lips
  I aft hae kissed sae fondly!
And closed for aye the sparkling glance
  That dwelt on me sae kindly!
And mould'ring now in silent dust
  That heart that lo'ed me dearly!
But still within my bosom's core
  Shall live my Highland Mary

THOMAS CAMPBELL.

Born 1777. Died 1844.

Author of "The Pleasures of Hope."

THOMAS CAMPBELL, a descendant of the ancient Scottish family of that name, was born at Glasgow, July 27, 1777, and educated at the University of Glasgow, where he became very proficient in the Greek language. After leaving school he spent a year in Argyleshire, where he wrote several of his poems, and then went to Edinburgh to enter upon a literary career. Here he composed and published, in 1799, one of his most popular works—"The Pleasures of Hope"—which soon won for him fame and an entrance into good society. With the profits of its sale he was enabled to visit the European continent. At Gottingen, Germany, he resumed his study of the Greek language, and elsewhere was an eye-witness of the battle of Hohenlinden, which forms the subject of one of his best-known poems.

On his return to Great Britain he found that his foreign associations had produced suspicions against him as a French spy, and on arriving at Edinburgh it was difficult for him to convince the authorities of his loyalty. During his travels he composed several of his well-known pieces.

In 1803 he removed to London, and afterwards to Sydenham, England, where he remained for seventeen years engaged in literary employments, but at times despondent on account of pecuniary embarrassments.

In 1806 a literary pension of about £200 annually was bestowed upon him, and in 1809 he published "Gertrude of Wyoming," with other poems. Previously he had contributed a history of Great Britain to the "Edinburgh Cyclopædia," a history of the reign of George III., etc. In 1812 he lectured on poetry at the Royal Institution, in 1814 he visited Paris, in 1818 he traveled in Germany, and for ten years afterwards he edited *Colburn's New Monthly Magazine*, occasionally printing a new poem.

He was the original projector of the London University. In 1826 he was elected lord rector of the University of Glasgow, and was twice re-elected to that position. In 1831 he started the London *Metropolitan Magazine*. In that year he wrote this remarkable passage: "My wife is dead, my son is mad, and my harp unstrung," and he might have added that his constitution was prematurely broken. Still he labored on in literary work, and made one or two more journeys abroad. In 1843 he removed to Boulogne, France, where, after a lingering illness, he died June 15, 1844.

His poems have their place in the standard libraries of famous British poets, and are too well known to require even further mention in this sketch.

THE SOLDIER'S DREAM.

BY THOMAS CAMPBELL

OUR bugles sang truce; for the night cloud had lowered,
And the sentinel stars set their watch in the sky,
And thousands had sunk on the ground overpowered—
The weary to sleep, and the wounded to die.

WHEN reposing that night on my pallet of straw,
By the wolf-scaring faggot that guarded the slain,
At the dead of the night a sweet vision I saw,
And thrice ere the morning I dreamt it again.

METHOUGHT from the battle-field's dreadful array
Far, far I had roamed on a desolate track:
'Twas autumn—and sunshine arose on the way
To the home of my fathers, that welcomed me back.

I FLEW to the pleasant fields, traversed so oft
In life's morning march, when my bosom was young;
I heard my own mountain-goats bleating aloft,
And knew the sweet strain that the corn-reapers sung.

WHEN pledged we the wine-cup, and fondly I swore
From my home and my weeping friends never to part;
My little ones kissed me a thousand times o'er,
And my wife sobbed aloud in her fullness of heart.

STAY, stay with us!—rest; thou art weary and worn!—
And fain was their war-broken soldier to stay;
But sorrow returned with the dawning of morn,
And the voice in my dreaming ear melted away.

JOSEPH ADDISON.

Born 1672.

Died 1719.

Author of the "Spectator" and other Works.

ONE OF THE most brilliant of English authors and essayists was Joseph Addison. Born at Milston, Eng., May 1, 1672, he was educated at the Charterhouse, London, and at Oxford. He early manifested literary talent, and under the facilities afforded by a liberal government pension, he was enabled to travel in Italy for three years, collecting literary material, and writing. In 1706 he was appointed under-secretary of state; about 1710 he became keeper of the public records at Dublin, and in 1717 was made secretary of state. Ill health and other circumstances, however, led him to resign this position, and he retired on an annual pension of about £1,500. His principal works are: "Cato," a tragedy; "Rosamond," an opera; "The Spectator;" "A Treatise on the Christian Religion," and numerous poems and contributions of essays to contemporary publications. The "Spectator," however, is that on which rests his undying fame as a pure and elegant writer. He died in England, June 17, 1719.

HYMN.

BY JOSEPH ADDISON.

HOW are Thy servants blest, O Lord!
How sure is their defence!
Eternal wisdom is their guide,
Their help omnipotence.

IN foreign realms, and lands remote,
Supported by Thy care,
Through burning climes I passed unhurt,
And breathed in tainted air.

THY mercy sweetened every soil,
Made every region please;
The hoary Alpine hills it warmed,
And smoothed the Tyrrhene seas.

THINK, O my soul, devoutly think,
How with affrighted eyes
Thou saw'st the wide-extended deep
In all its horrors rise!

CONFUSION dwelt in every face,
And fear in every heart,
When waves on waves, and gulfs in gulfs,
O'ercame the pilot's art.

YET then from all my griefs, O Lord,
Thy mercy set me free;
Whilst in the confidence of prayer
My soul took hold on Thee.

FOR though in dreadful whirls we hung,
High on the broken wave;
I knew Thou wert not slow to hear,
Nor impotent to save.

THE storm was laid, the winds retired,
Obedient to Thy will;
The sea, that roared at Thy command,
At Thy command was still.

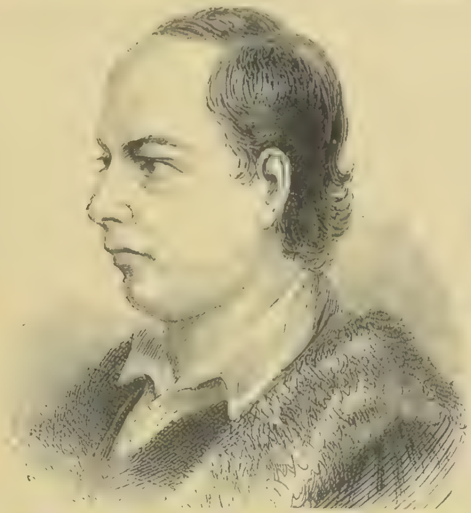
IN midst of dangers, fears, and deaths,
Thy goodness I'll adore—
And praise Thee for Thy mercies past,
And humbly hope for more.

MY life, if Thou preserv'st my life,
Thy sacrifice shall be;
And death, if death must be my doom,
Shall join my soul to Thee.

Oliver Goldsmith

Born 1728.

Died 1774.



Author of the "Deserted Village" and Other Poems.

OLIVER GOLDSMITH was the son of a clergyman. He was born in Ireland, Nov. 10, 1728, and educated at the universities of Dublin, Edinburgh, and Leyden, with a view of adopting the medical profession. In a sudden freak he left Leyden with a flute, a single shirt in his pocket, and no money, and wandered over a considerable part of Europe, sometimes earning food and lodging by playing his flute to the peasantry. In 1758 he returned to England in a penniless condition, and was employed as an usher in a school at Peckham, but this position was soon resigned in order that he might devote his time to literature. He appears to have been industrious, producing various works, but his want of economy kept him embarrassed in money matters.

Between 1759 and his death, April 4, 1774, he wrote "An Essay on the Present State of Polite Learning;" the poems of "The Traveler," "The Deserted Village," and "Retaliation;" the comedies of the "The Good-Natured Man" and "She Stoops to Conquer;" the novel of "The Vicar of Wakefield;" his Histories of Greece, England and Rome; "Animated Nature," "The Citizen of the World," and several lesser compositions. He numbered among his friends Dr. Samuel Johnson, Garrick, Burke and other eminent characters.

AN ELEGY ON THE DEATH OF A MAD DOG.

BY OLIVER GOLDSMITH.

GOOD people all, of every sort,
Give ear unto my song,
And if you find it wond'rous short—
It cannot hold you long.

IN Islington there was a man,
Of whom the world might say
That still a godly race he ran—
Whene'er he went to pray.

A KIND and gentle heart he had,
To comfort friends and foes;
The naked every day he clad—
When he put on his clothes.

AND in that town a dog was found,
As many dogs there be,
Both mongrel, puppy, whelp, and hound,
And curs of low degree.

THIS dog and man at first were friends;
But when a pique began,
This dog, to gain his private ends,
Went mad, and bit the man.

AROUND from all the neighboring streets
The wondering neighbors ran,
And swore the dog had lost his wits,
To bite so good a man.

THE wound it seemed both sore and sad
To every Christian eye;
And while they swore the dog was mad,
They swore the man would die.

BUT soon a wonder came to light,
That showed the rogues they lied;
The man recovered of the bite—
The dog it was that died.

TAYLOR COLERIDGE.

Born 1772. Died 1834.

Author of "The Rime of the Ancient Mariner," and Other Poems.

BESIDES BEING an eminent poet, Samuel Taylor Coleridge, who was born at Ottery St. Mary, Eng., Oct. 21, 1772, was also distinguished as a theologian and philosopher. Educated at Christ's Hospital, London, and Jesus college, Cambridge, he early exhibited a fondness for metaphysical studies and classical knowledge. During his stay at Cambridge he went to London, and enlisted in a cavalry regiment under an assumed name, but after an absence of four months was returned to his friends. With Southey and Lovell, two other enthusiasts, he projected a model colony in the United States, which, from a want of money and other facilities, was never carried out. After a visit to Germany for the purpose of studying the language, Coleridge settled in the "lake district" of England. In 1804 he visited Malta, and, in 1810, went to London, but soon afterwards took up his residence at Highgate, England, remaining there until his death.

In politics, he changed from a Republican to a Royalist; in religion, from a Unitarian to an Established Churchman. He was also a confirmed opium-eater. As a philosopher he was speculative, but had no fully-defined system. As a writer he possessed a fine imagination and an elegance of expression.

He died in London, July 25, 1834, leaving behind him many beautiful poems and influential treatises. Among his principal writings may be named "Christabel," "The Rime of the Ancient Mariner," "Hymn Before Sunrise in the Valley of Chamouny," "The Statesman's Manual," "Literary Biographies," "Aids to Reflection," "Table Talk," etc. He ranks among the standard British poets.

Poems by S. Taylor Coleridge.

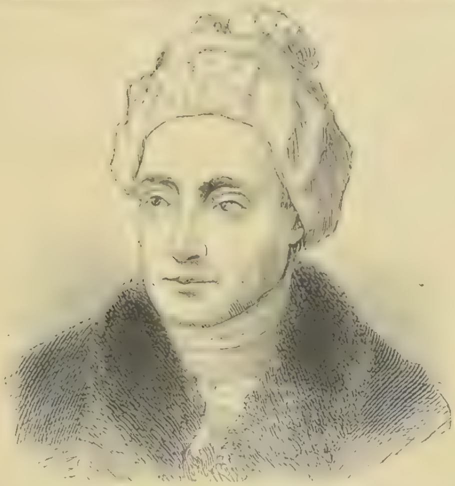
Severed Friendship.

ALAS! they had been friends in youth;
But whispering tongues can poison truth;
And constancy lives in realms above;
And life is thorny; and youth is vain;
And to be wroth with one we love,
Doth work like madness in the brain.
And thus it chanced, as I divine,
With Roland and Sir Leoline.
Each spake words of high disdain
And insult to his heart's best brother:
They parted—ne'er to meet again!
But never either found another
To free the hollow heart from paining—
They stood aloof, the scars remaining,
Like cliffs which had been rent asunder;
A dreary sea now flows between;
But neither heat, nor frost, nor thunder,
Shall wholly do away, I ween,
The marks of that which once hath been.

Answer to a Child's Question.

DO YOU ask what the birds say? The sparrow, the dove,
The linnet and thrush say "I love, and I love!"
In the winter they're silent, the wind is so strong;
What it says I don't know, but it sings a loud song.
But green leaves, and blossoms, and sunny warm weather,
And singing and loving—all come back together.
But the lark is so brimful of gladness and love,
The green fields below him, the blue sky above,
That he sings, and he sings, and forever sings he,
"I love my Love, and my Love loves me."

WILLIAM COWPER.



Born 1731.

Died 1800.

Author of "Light Shining Out of Darkness," and Other Beautiful Poems.

WILLIAM COWPER, the son of a clergyman, was born at Berkhampstead, Eng., Nov. 15, 1731. After studying at the Westminster school, it was intended to fit him for the legal profession, but he seems to have acquired but little legal knowledge. He was afflicted with nervous weakness and constitutional timidity, which made him very retiring in his disposition; and he was obliged to resign a clerkship in the House of Lords owing to an agitation of mind that resulted in temporary insanity, for which he was consigned to a private lunatic asylum. After a time he recovered his reason, and went, in 1765, to reside with Rev. Mr. Unwin's family at Huntingdon, and after the death of Mr. Unwin Cowper continued his residence with the widow at Olney and Weston, England. She also died in 1796.

Insanity again attacked him in 1773, continuing until 1778; and from 1794 until his death, which occurred in England, April 25, 1800, he suffered from this terrible affliction. In his lucid hours, however, he established his undying fame as a standard British poet. Besides his own principal poems of "The Task," "Tirocinium," and minor poetry, he translated Homer into blank verse with great fidelity, and also some of Madame Guyon's religious poems. His letters, also published, are considered as elegant specimens of epistolary composition.

Light Shining Out of Darkness.

BY WILLIAM COWPER.

GOD moves in a mysterious way
His wonders to perform;
He plants His footsteps in the sea,
And rides upon the storm.

DEEP in unfathomable mines
Of never-failing skill,
He treasures up His bright designs,
And works His sovereign will.

YE fearful saints, fresh courage take!
The clouds ye so much dread
Are big with mercy, and shall break
In blessings on your head.

JUDGE not the Lord by feeble sense,
But trust him for His grace:
Behind a frowning providence
He hides a smiling face.

HIS purposes will ripen fast,
Unfolding every hour;
The bud may have a bitter taste,
But sweet will be the flower.

BLIND unbelief is sure to err,
And scan His work in vain:
God is His own interpreter,
And He will make it plain.

THE AUTHOR OF "HOME, SWEET HOME."

JOHN HOWARD PAYNE,
Author of "Home, Sweet Home."

THE AUTHOR of this, one of the sweetest lyrics ever written, John Howard Payne, was born in New York City, June 9, 1792. His infancy was passed on Long Island, N. Y., and in Boston, and his youthful tuition was derived principally from his father, who was at that time professionally engaged in school-teaching.

At an early age the lad manifested considerable talent in oratory and an interest in dramatic literature. When about twelve years old he was placed in a store, in New York City, as a clerk, and while still thus employed at the age of thirteen, he edited a small newspaper called *The Thespian Mirror*. His contributions to its columns attracted much attention by their excellence, and induced a Mr. Seaman to send the boy to Union college, at Schenectady, N. Y., in order to improve his talents by a better education.

Young Payne, however, with his father's permission, and without waiting to finish his collegiate course, made his first appearance on the stage as an actor, at the Park theater, in New York, February 24, 1809, as *Norval*, in the play of "Douglas." In this character he was favorably received and heartily applauded. This reception settled his destiny, and for several years he played in various cities with marked success and increasing reputation, until he ranked among the very best American actors.

In 1813 he sailed for England, and, on June 4, made his appearance at Drury Lane theater, London, as *Norval*. His success continued, and brought him within the acquaintance of many distinguished personages. He also visited Paris, where he was the room-mate of Washington Irving.

For twenty years he remained in Europe, engaged in acting and in translating and adapting French dramas and operas for the London theaters. Among his other dramatic productions were the plays of "Charles the Second," and "Therese, or the Orphan of Geneva." He also wrote, for Edmund Kean, in 1818, his play of "Brutus, or the Fall of Tarquin," which met with great favor and is still sometimes put upon the stage. He was then twenty-seven years old. Not long afterward he assumed the management of Sadlers Wells theater, in London, but it proved a bad speculation, for he lost his money, ran into debt, and was thrown into a debtors' prison. In this strait he translated and adapted two of Victor's French plays, with the proceeds of which he was enabled to pay off his indebtedness and obtain his release. He then resumed his business as a playwright, and after playing three nights in London, in "Richard III," he abandoned the stage and returned to Paris.

His celebrated musical composition, the opera of "Clari, the Maid of Milan," was put upon the stage at Covent Garden theater, London, May 8, 1823, and in this occurred the song of "Home, Sweet Home," sung by Miss M. Tree, who sustained the part of *Clari*. The song immediately became immensely popular, one hundred thousand copies of it having been sold during its first year, although Payne's name was omitted from the title.

In 1832 he returned to the United States, and on his arrival at New York received a brilliant ovation and a benefit at the Old Park theater, his own play of "Brutus" being the principal attraction, with Edwin Forrest as *Brutus*. The tickets sold at five dollars each. "Home, Sweet Home," was sung, and there was a poetic address prepared for the occasion. Payne's play of "Charles II." was the afterpiece, with Forrest, Kemble, J. W. Wallack and other first-class actors in the cast. The receipts were more than $7,000.

In 1842 Mr. Payne was appointed consul at Tunis; was recalled in 1845, and reappointed in 1851. But in April, 1852, he sickened and died while at his post, and was buried at Tunis. At his grave, by direction of the United States government, a slab was erected, bearing a suitable inscription, to which is added: "This stone is placed here by a grateful country." Also the following verse by R. S. Chilton:

"Sure, when thy gentle spirit fled
  To realms beyond the azure dome,
With arms outstretched God's angels said
  "Welcome to heaven, 'Home, Sweet Home.'"

Mr. Payne never married, and never knew, except in infancy, the joys of which he so feelingly wrote in his undying song.

In 1883, by the munificence of Mr. W. W. Corcoran, the well-known banker at Washington, the remains of John Howard Payne were brought from Tunis to the United States capital and re-interred on the ninth of June with appropriate memorial ceremonies, it being the ninety-first anniversary of the poet's birth. The interest of the occasion was heightened by the recitation of an original poem, tenderly commemorative of the dead, by the same gentleman, Mr. Chilton, who inscribed the foregoing touching verse upon his foreign tombstone, and the famous song was sung at the grave. A fine monument, surmounted with a bust of the song-writer, and properly inscribed, marks the spot where he calmly rests.

The following are the words which made immortal the subject of our sketch:

'Mid pleasures and palaces though we may roam,
  Be it ever so humble, there's no place like home.
A charm from the skies seems to hallow us there,
  Which seek through the world, is not met with elsewhere.
    Home! home! sweet, sweet home!
      There's no place like home,
    There's no place like home.

An exile from home, splendor dazzles in vain.
  Oh, give me my lowly-thatched cottage again!
The birds singing gayly that came at my call,—
  Give me them with that peace of mind, dearer than all.
    Home! home! sweet, sweet home!
      There's no place like home,
    There's no place like home.

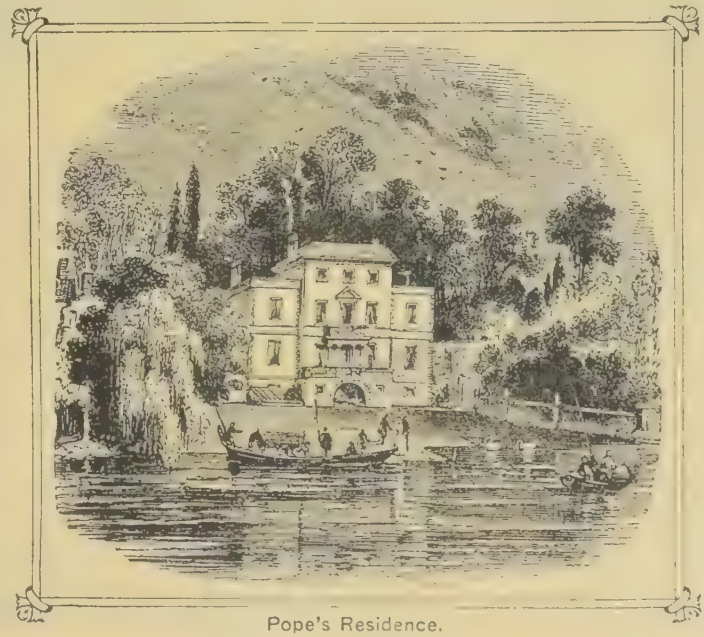
James Thomson. Alexander Pope.

James Thomson.

ONE of the British pastoral poets, James Thomson, the son of a Scotch clergyman, was born at Ednam, Scotland, Sept. 11, 1700, and was educated at Jedburgh and Edinburgh. Four years were devoted to preparing for the pulpit, but this design was given up, and Thomson went to London, where he was for several months a tutor in the family of Lord Binning. The first of his "Seasons," a poem on which his fame chiefly rests—"Winter"—was published in 1726, and the three other seasons respectively, in 1728, 1729 and 1730. During these years he also produced his tragedy of "Sophonisba," the poem of "Britannia," and a poem on Sir Isaac Newton. As one result of his literary success, Lord Chancellor Talbot selected him in 1731 to travel with his son on the continent of Europe. During the three years thus occupied Thomson and his companion visited most of the European courts, and after their return to England the lord chancellor retained Thomson in his employment as secretary of briefs until the death of the former in 1737, when Thomson was removed. Soon afterwards he received a pension of about £100 a year from the Prince of Wales, and was appointed surveyor-general of the Leeward islands. The office was a sinecure, the duties being performed by a deputy, and Thomson's net salary reaching about £300 a year. Thus being placed in easy circumstances, Thomson continued his literary labors until his death, near Richmond, Eng., Aug. 27, 1748. Besides the works enumerated above, he wrote the tragedies of "Agamemnon," "Edward and Eleanora," "Tancred and Sigismunda," the poems of "Liberty" and "The Castle of Indolence." His play of "Coriolanus," published after his death, was presented at Covent Garden. He had the reputation of a rough exterior and a decided propensity for indolence.

Alexander Pope.

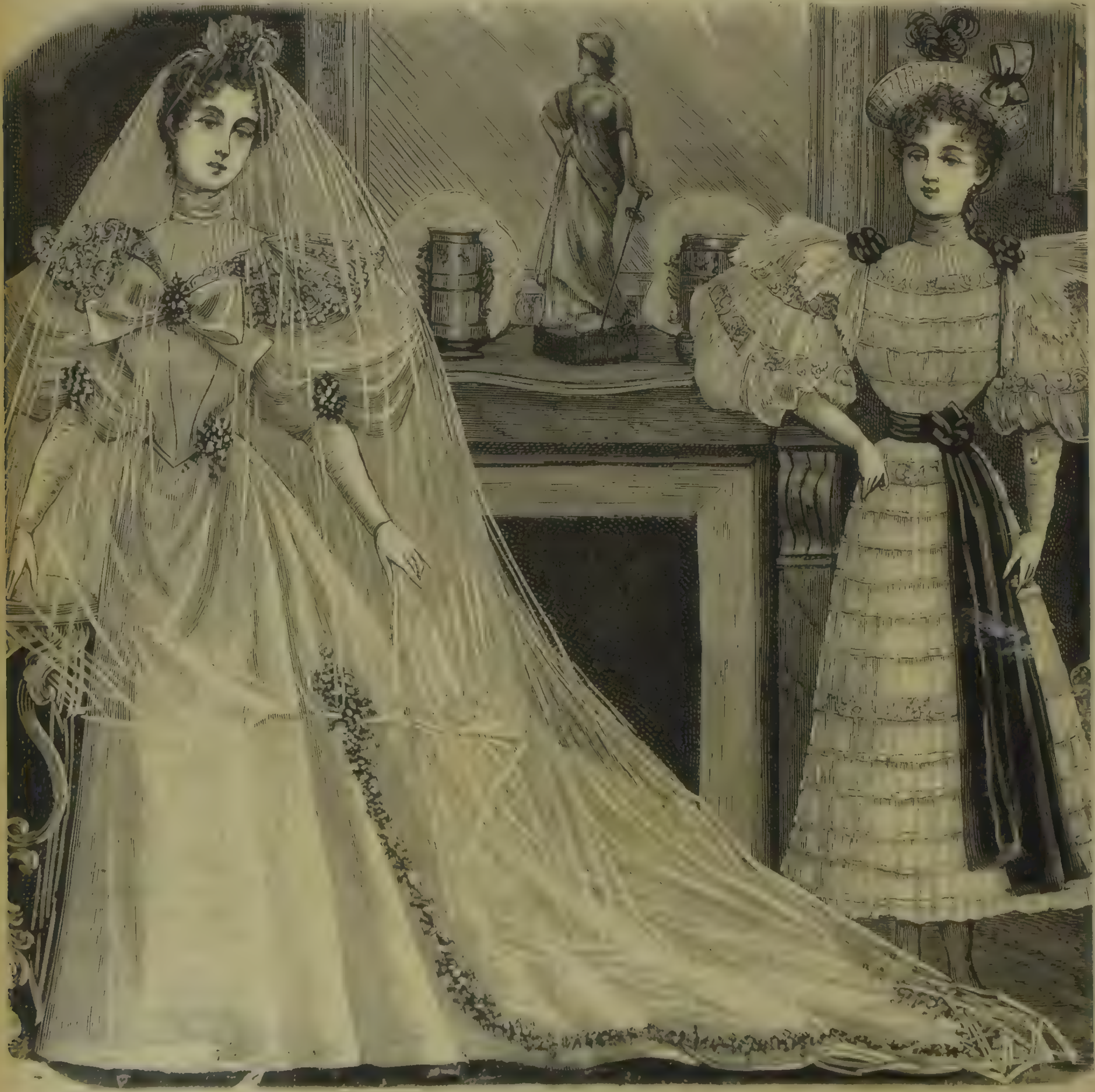
THE celebrated poet, Alexander Pope, the son of a draper, was born in London, May 22, 1688. He was a precocious child, writing a play before he was twelve years old, and composing poetry at an age so early that he tells us he "lisped in numbers." His education was acquired at two private schools, from two Roman Catholic priests, who were employed as his tutors, and from his own persevering studies. He wrote his "Pastorals" when he was sixteen years old, and they secured him the friendship of many eminent persons The "Pastorals" were followed by the publication, successively, of his "Essay on Criticism," "The Messiah," "The Rape of the Lock," "The Temple of Fame," "Windsor Forest" and "The Epistle from Eloisa," and by these his reputation as a poet was permanently established. In 1720 he completed his translation of Homer's "Iliad," by which he gained more than £5,000. In the translation of Homer's "Odyssey" he was aided by Broome and Fenton. The "Essay on Man" appeared in 1733; the first three books of "The Dunciad" in 1723, the fourth book in 1742. His later literary work was the production of satires. In 1725 he published a poor edition of Shakspeare's works. The "Ode on Solitude" was written when Alexander was near twelve years; from thirteen to fifteen he labored upon an epic poem entitled "Alcander," of which he completed four books and then destroyed it. Two plays, a comedy and tragedy, which he had written, were similarly disposed of. He studied painting a year and half, but his poor physical body and defective eyesight interposed an effectual bar to success, and that pursuit was accordingly abandoned. He was so deformed that it was necessary to prop his body in position in order to enable him to accomplish his work. He died at Twickenham, May 30, 1744.

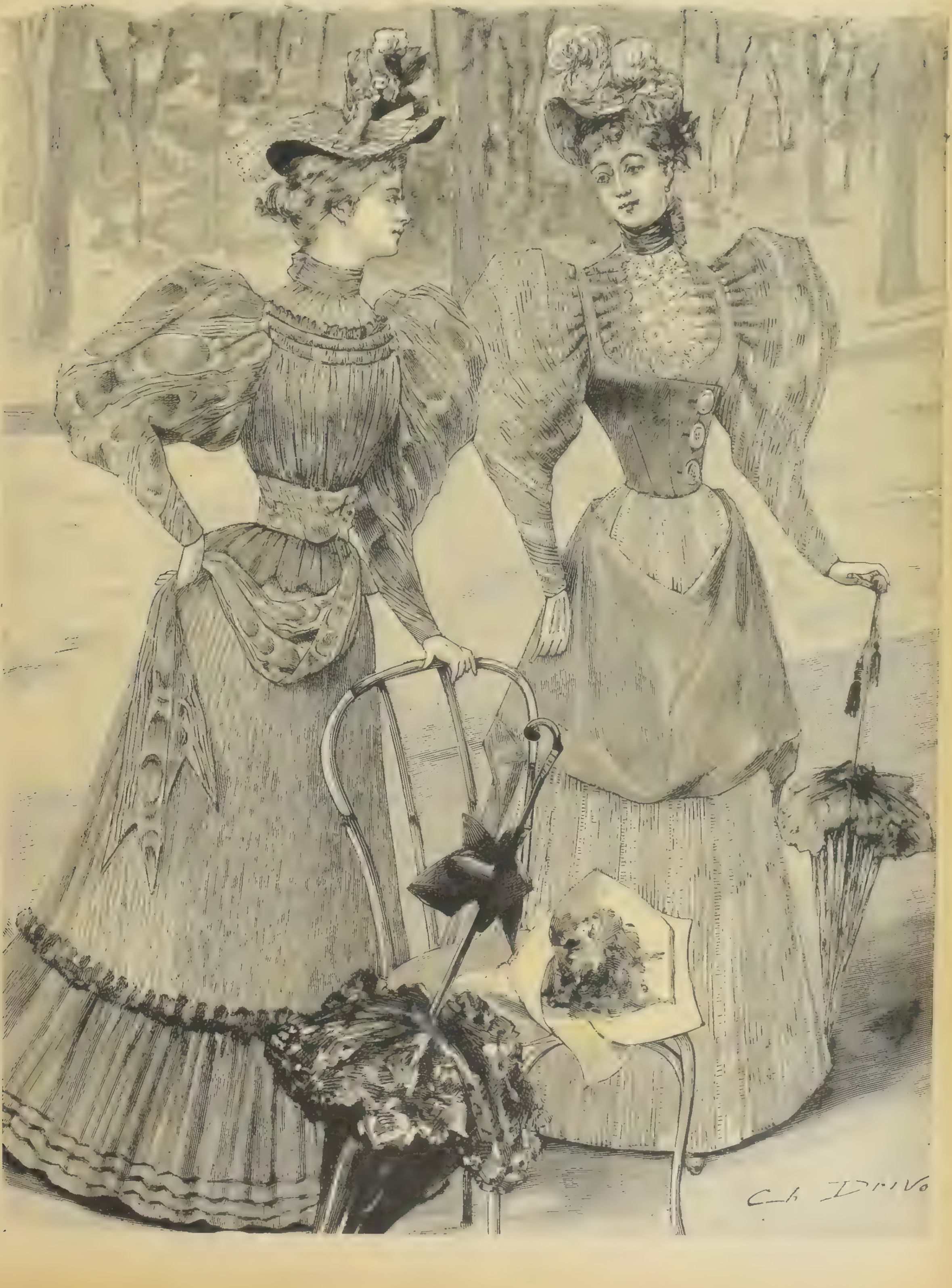


Pope's Residence.

The Science of Dress

ILLUSTRATED.

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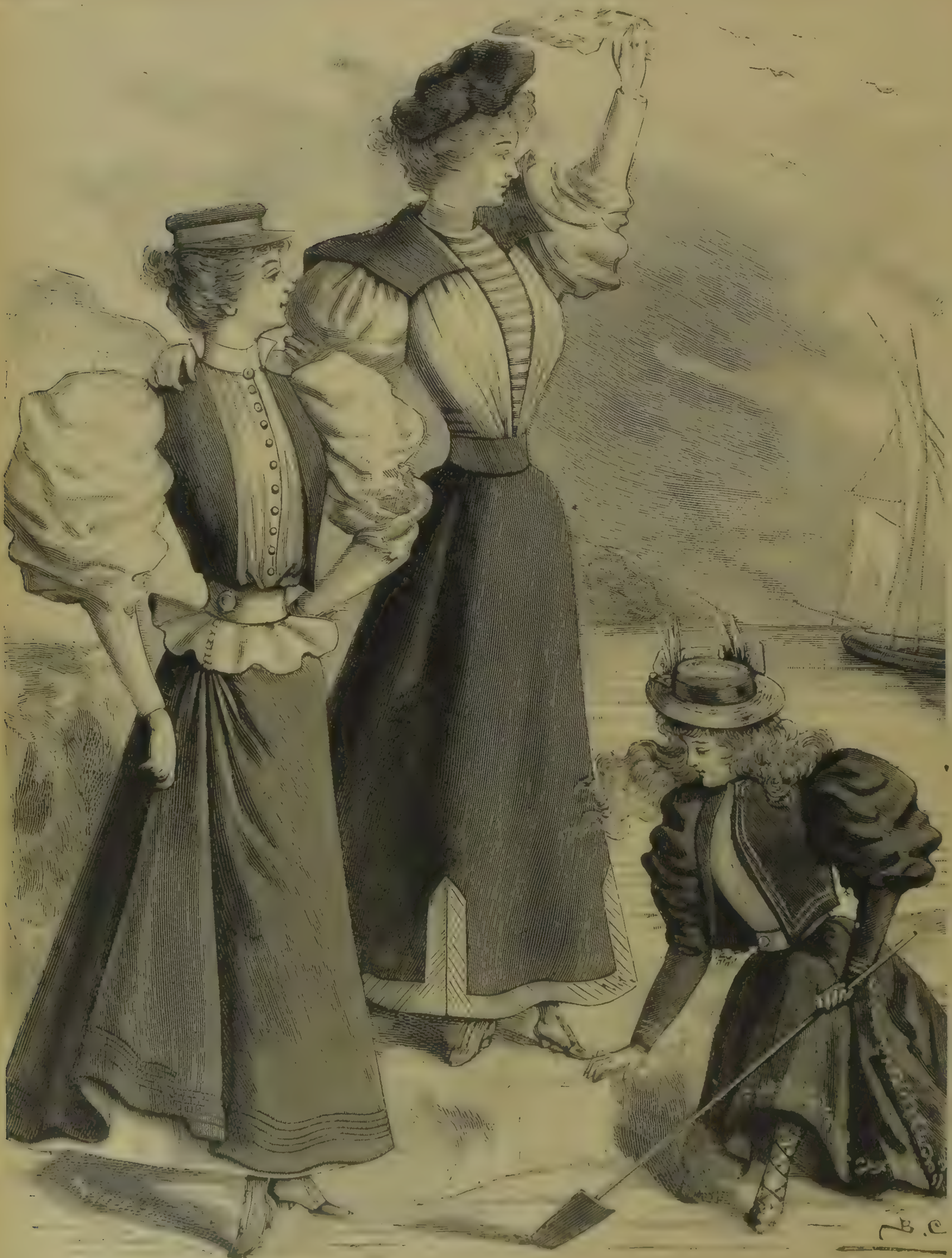
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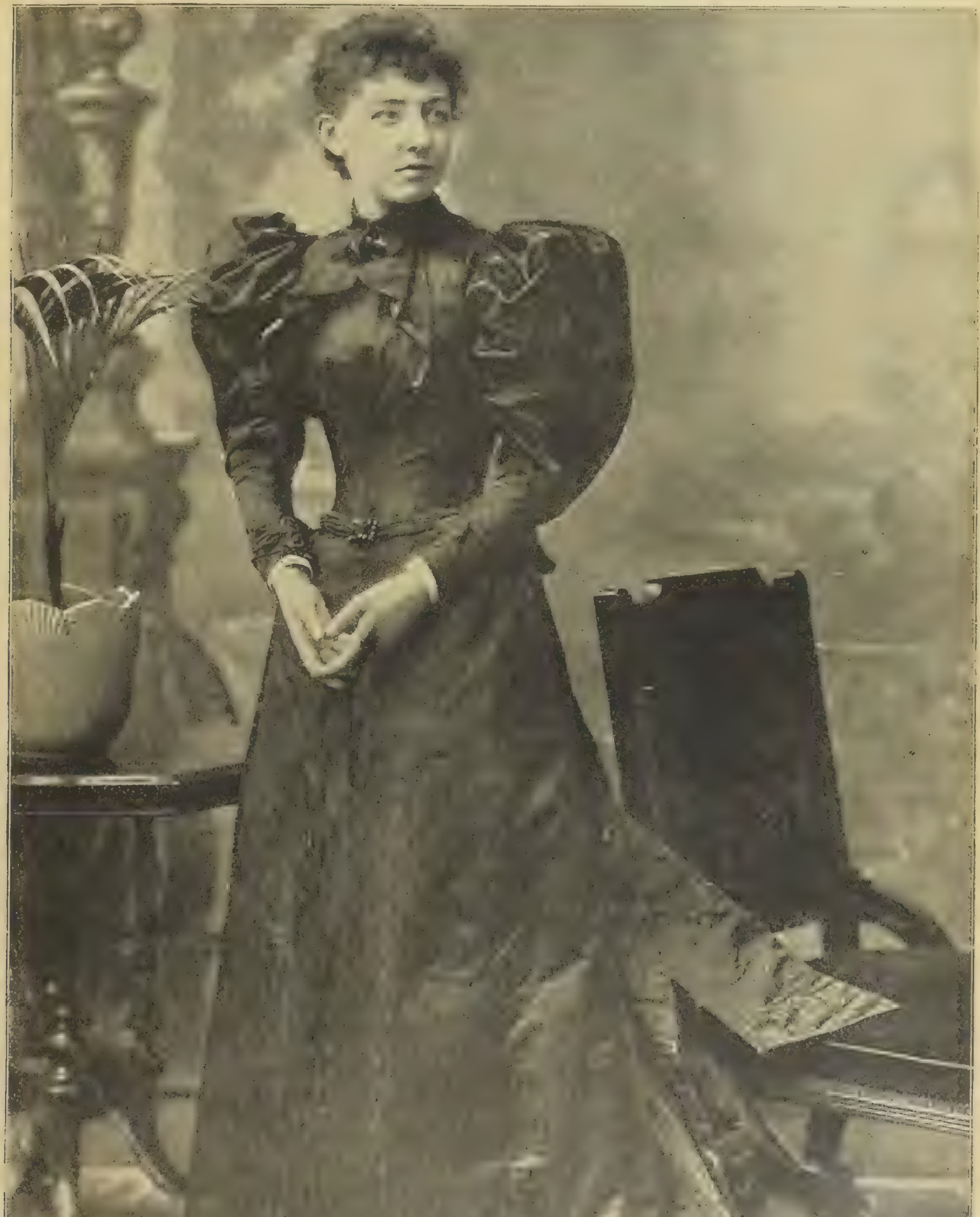
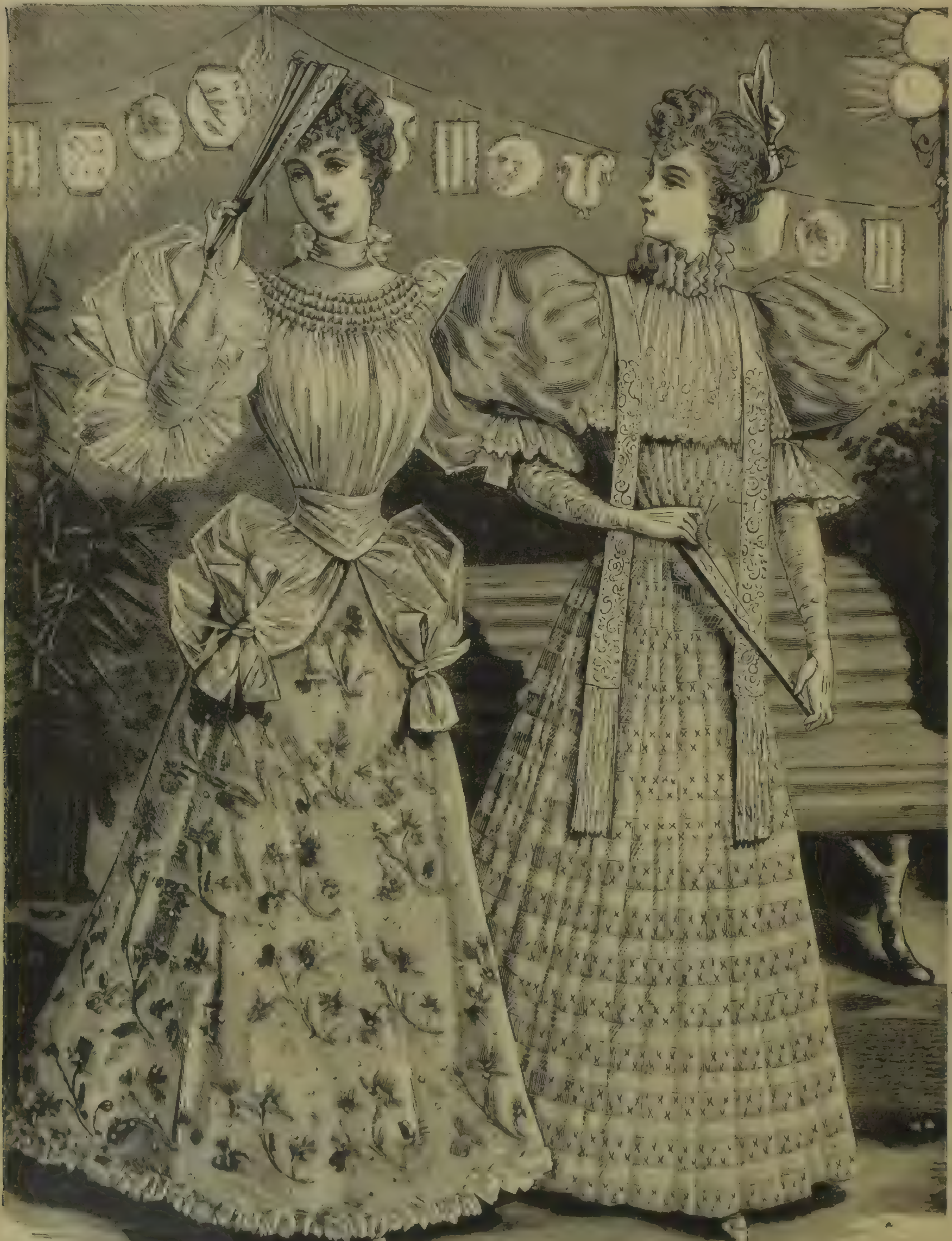
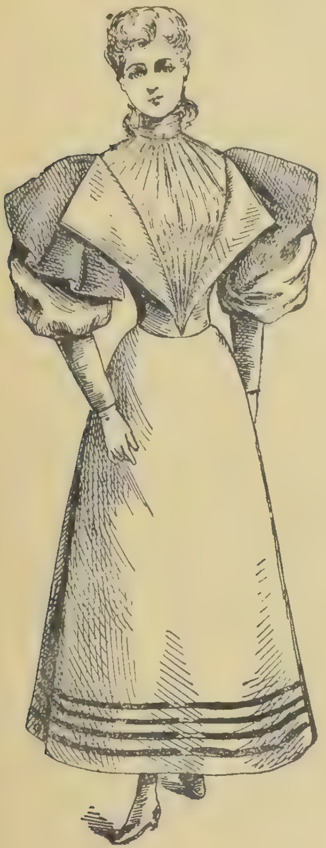
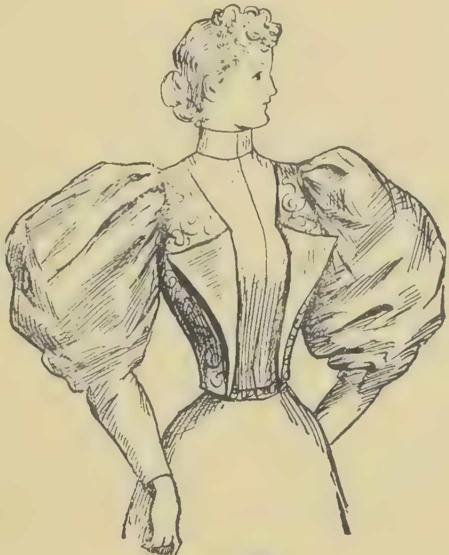
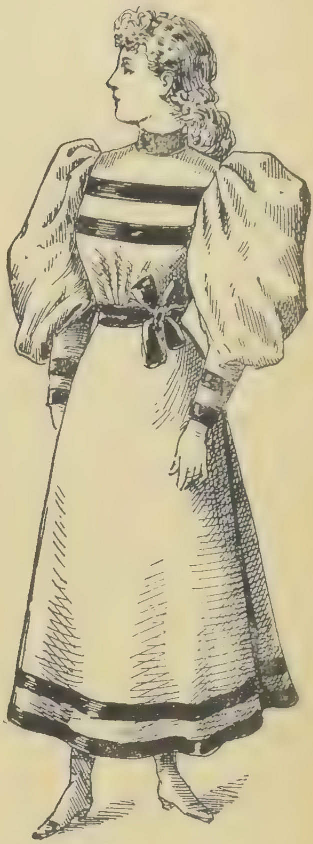
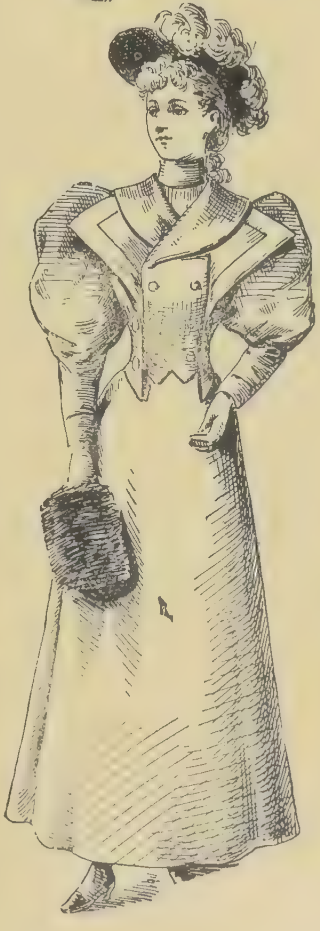


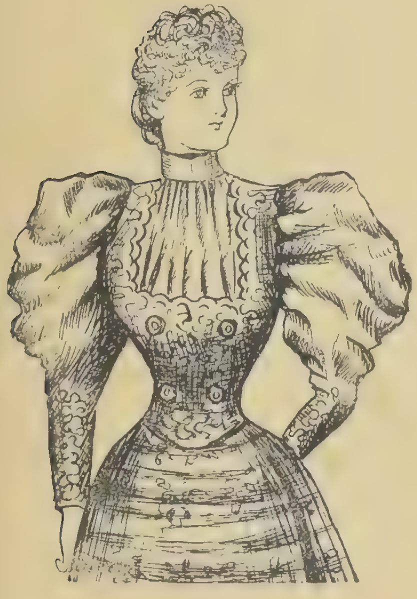


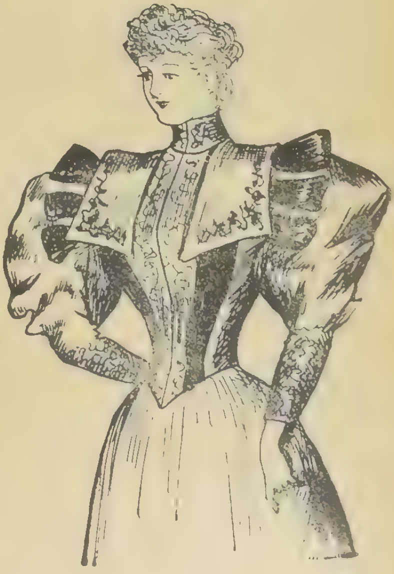


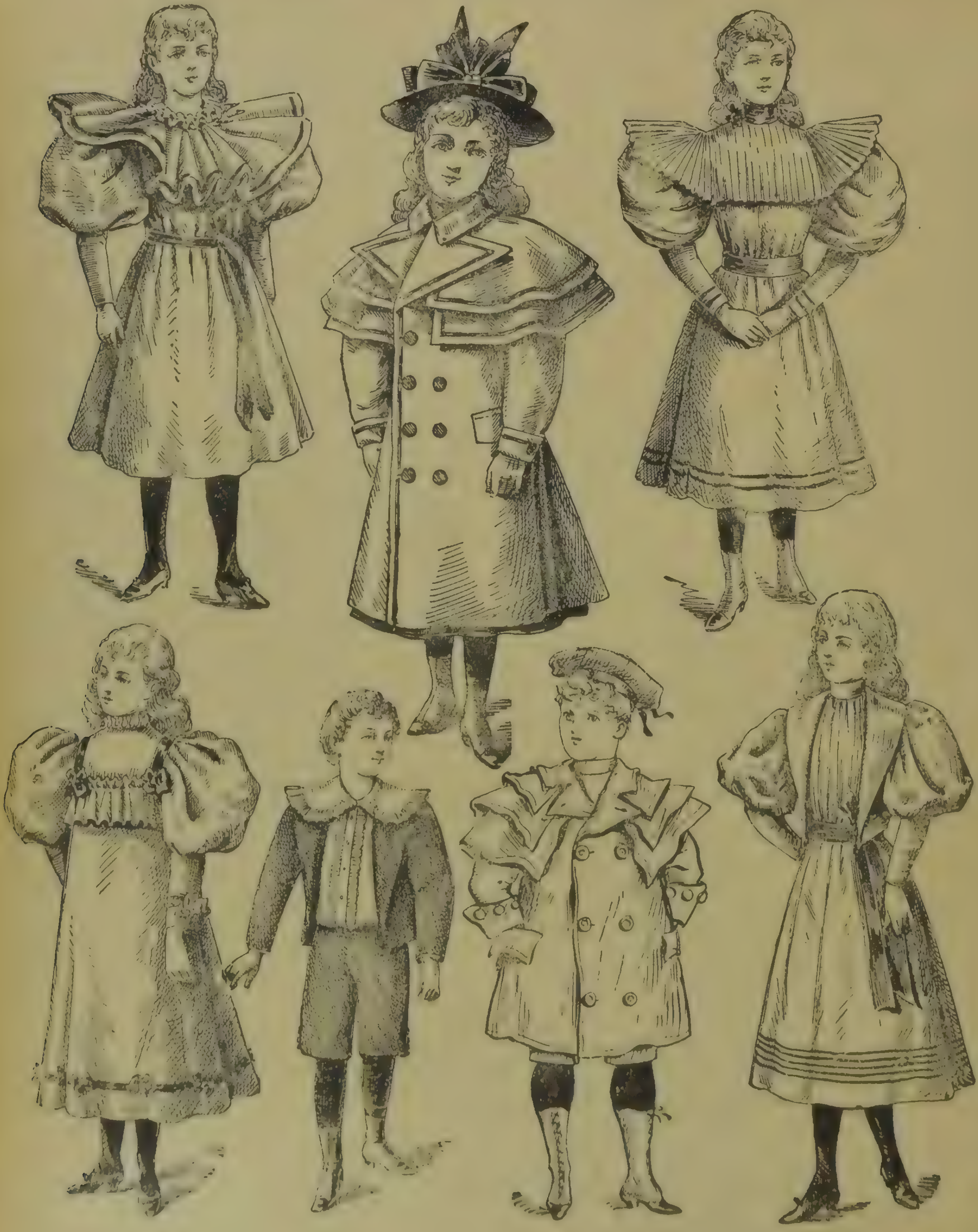












ROBERT RAIKES,

Prominent Promoter of Sunday-School Instruction and Moral Education.

THE NAME of Robert Raikes has long been intimately connected with the progress of moral and religious education, as taught in English and American Sunday-Schools. It is not correct to say, however, that he was the originator of these useful institutions, but as a pious and benevolent gentleman, and the promoter of healthful instruction, he stands prominently in the list of public benefactors.

ROBERT RAIKES.

Robert Raikes was born at Gloucester, England, in the year 1735. His father was the proprietor and publisher of the Gloucester *Journal*, a paper that appears to have been ably conducted, and justly enjoying an extensive patronage. Whatever advantages for gaining an education young Robert possessed are veiled in obscurity, but in due season he succeeded to his father's business and prospered.

He is represented as manifesting an eminent degree of piety, with a constant attendance upon public worship, not only on the Sabbath, but daily during the week, at the cathedral in his native town. Nor was his religion confined to an observance of church ordinances. Much of his leisure time was given to the encouragement of benevolent efforts to relieve and instruct the poor and ignorant people in that vicinity.

It was in the course of this charitable work that his attention was called to the idle and dissipated desecration of the Sabbath by the youth of Gloucester and other towns in England, whose morals had become greatly depraved and were a source of public complaint. Mr. Raikes witnessed enough of their vile conduct to convince him that something ought to be done to stay the tide of profligacy that was ruining the rising generation, and the idea of Sunday-Schools for their restraint and reformation impressed him so favorably that, with the assistance of Rev. Thomas Stock, he established one of these schools at Gloucester about the year 1781. Sunday-Schools, it is alleged, had been opened at Milan, in Italy, by Cardinal Borromeo, quite two hundred years previous; in England, in the seventeenth century, by Rev. Joseph Alleine; at Brechin, by Rev. David Blair, about 1760, and in Yorkshire, England, about 1763, by Rev. Theophilus Lindsay.

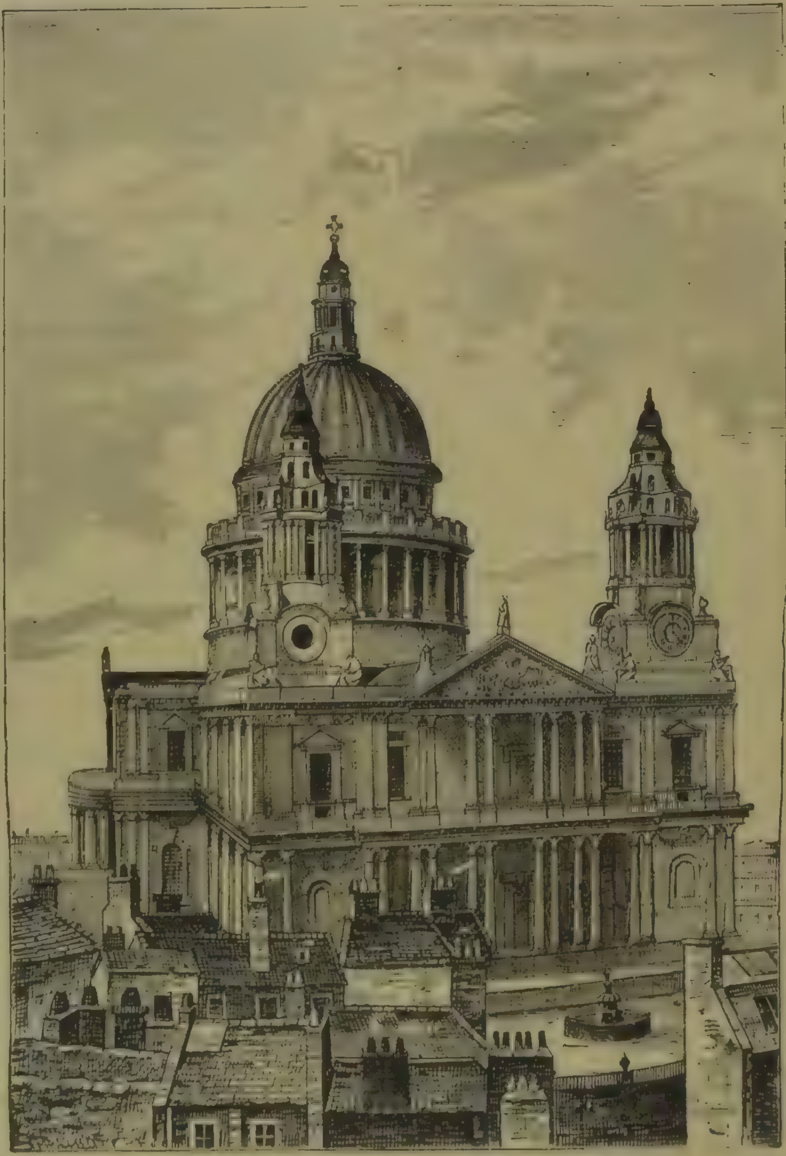
Mr. Raikes, however, appears to have shown himself the most successful and permanent organizer of these schools, and great credit is due to him on this account. The impetus which he gave to this benevolent work was such that in 1833—fifty-two years later—there were, in Great Britain, 16,828 of them, with 1,548,890 scholars.

His original plan embraced the employment of four women who had previously been engaged in teaching poor children, to receive and instruct as many as he should bring to them every Sunday. These women were each paid about twenty-three pence per day for their services. At first only a few of the street children could be induced to enter the schools, but this number was gradually increased.

Lessons in reading were first taught. Then the children were taken to church, in care of their teachers, and after their return to the schools they were drilled in reciting the catechism for an hour. They ranged in age from six to fourteen years, and, if their hands and faces were clean, and their hair combed, they were welcomed, although they came in ragged clothing and barefooted. Rewards of merit, of small value, were presented when deserved, and work was found for the older boys and girls. This course served to create a widespread interest and healthful emulation in the schools, and has since been wisely imitated.

Gradually the fame of these institutions extended to other parts of the kingdom, until, as we have demonstrated, they soon became popular and greatly beneficial in their results.

How much of individual good and social reformation was effected, even in Mr. Raikes' lifetime, may be judged, for it was declared, after several years had elapsed, that not one of the Sunday-scholars at Gloucester had ever been sent to any house of correction within or outside of the city. Mr. Raikes lived to attain a good old age, his death occurring in 1811.



ST. PAUL'S CATHEDRAL.

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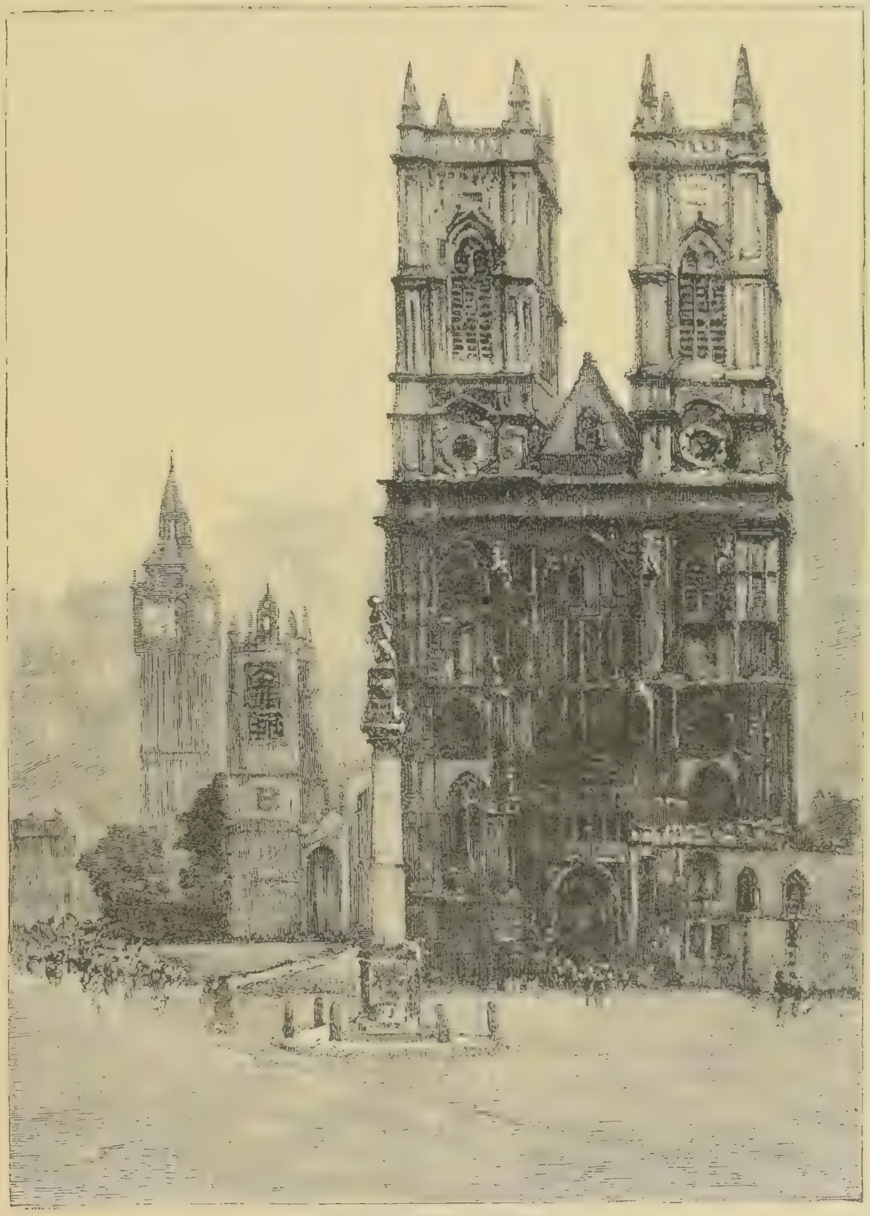
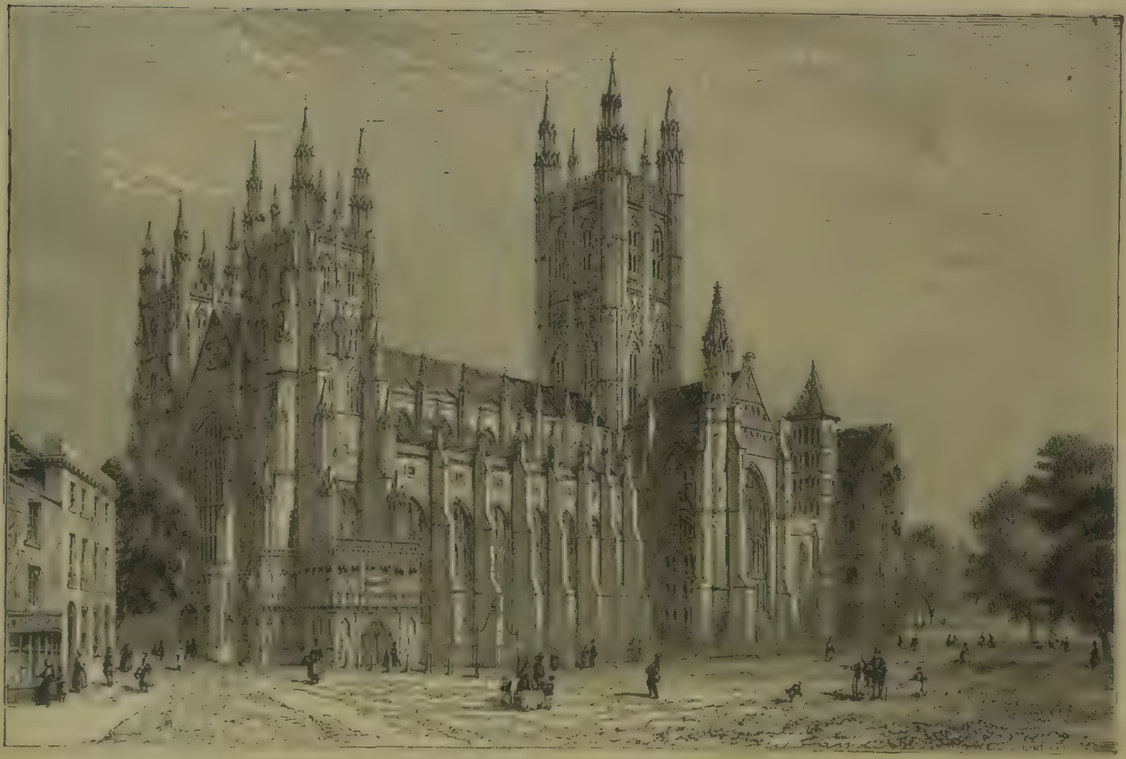


WESTMINSTER ABBEY.

[See page 177]



CANTERBURY CATHEDRAL.

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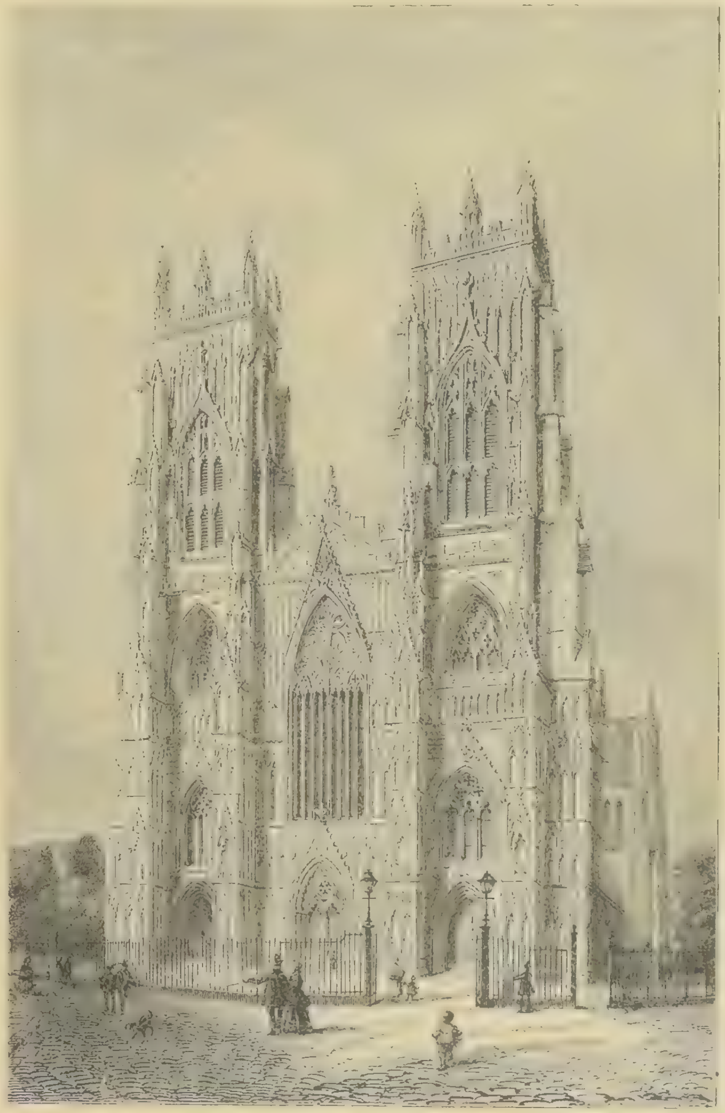

YORK CATHEDRAL.

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LINCOLN CATHEDRAL.

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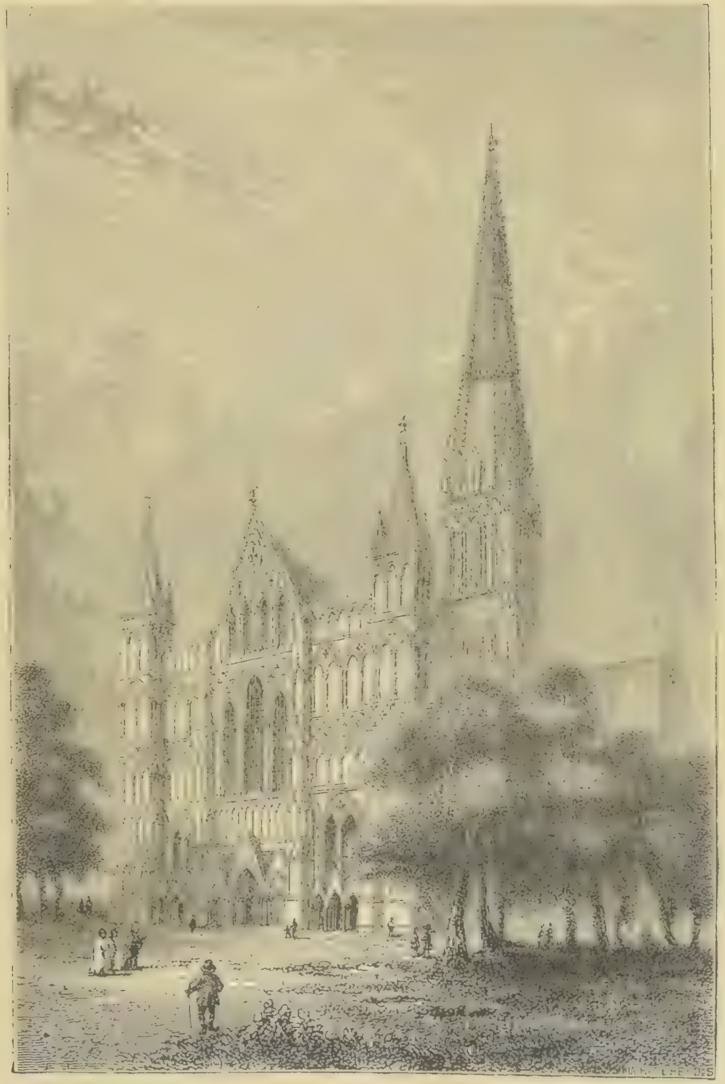

SALISBURY CATHEDRAL.

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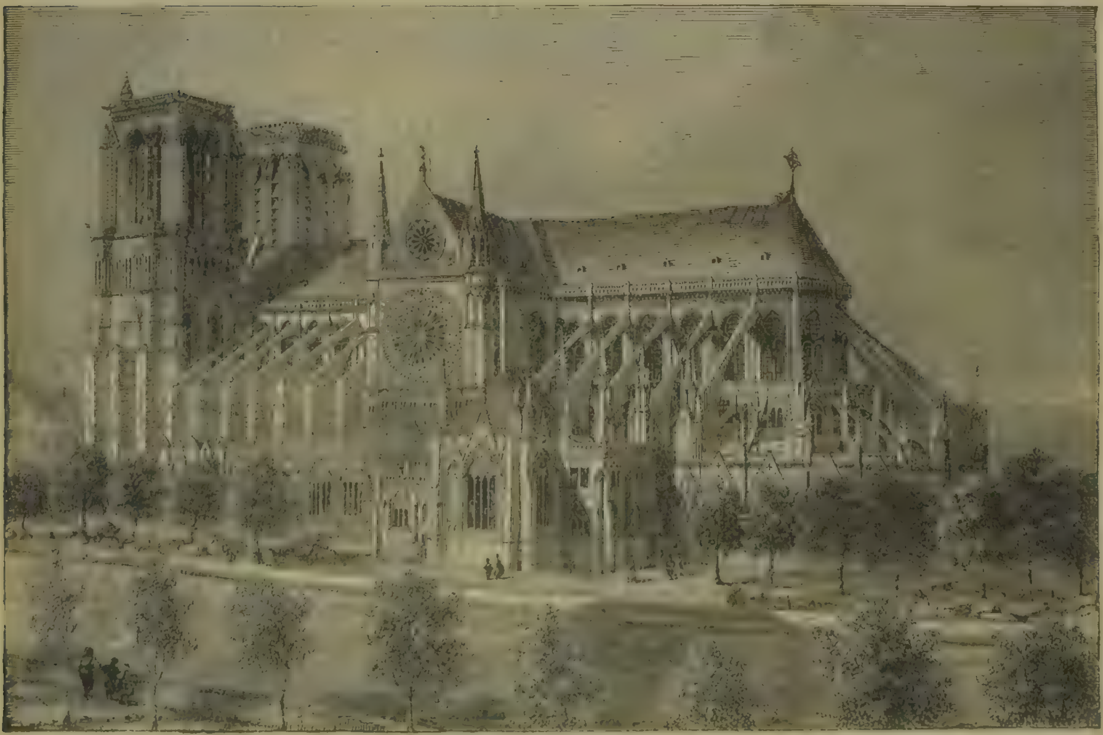

NÔTRE DAME, PARIS.

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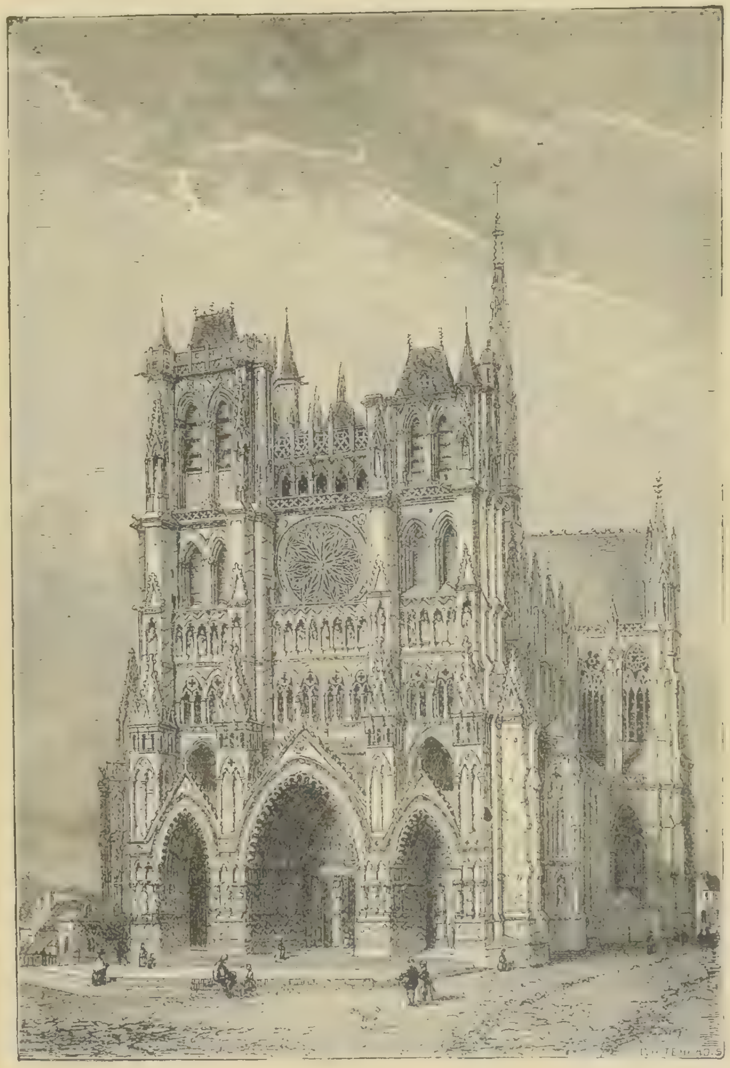

AMIENS CATHEDRAL.

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MILAN CATHEDRAL.

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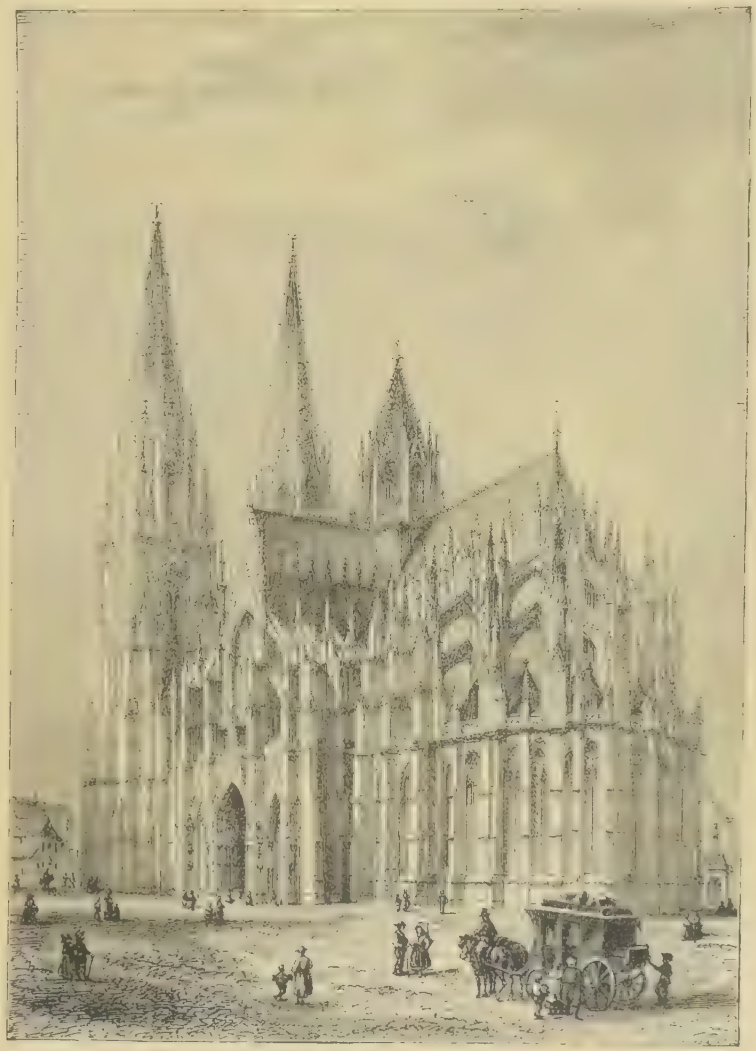

COLOGNE CATHEDRAL.

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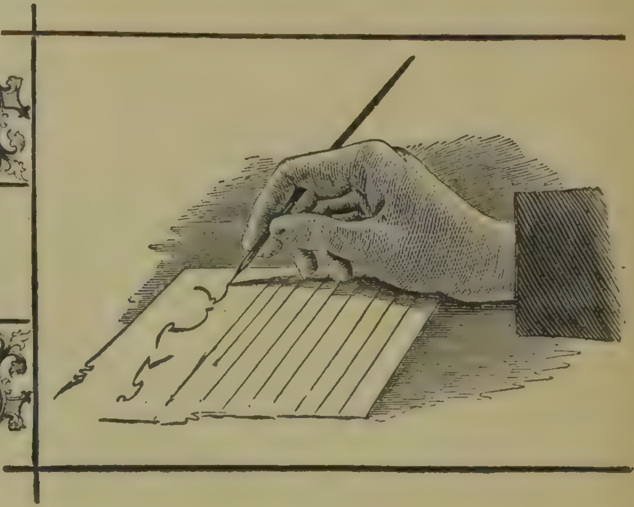
Short-Hand Writing.



Short-Hand for Business Purposes.

SPEECH and writing are the grand mediums for the interchange of thought and affection, and thus for carrying on the necessary intercourse of life. Between these two methods of communication there has always existed great disparity in point of facility and dispatch. To *speak*, is an exercise comparatively rapid, easy, and delightful; to *write*, is felt by all to be tedious, cumbrous, and wearisome, in an extreme degree. Is this disparity necessary? or, does it result from the imperfection of our system of writing? The hand is as skilfully organized for the rapid execution of written characters, as are the larynx, mouth, tongue, and lips, for the ready articulation of spoken sounds. It is an interesting and important inquiry,—Is it not possible to write a series of simple signs as quickly as we utter the sounds they represent?

Within the last hundred years, travelling has been expedited to seven times the former rate of speed; within the last fifty years the epistolary correspondence of this country has increased fifteen-fold, by the introduction of cheap, but remunerative, postal communication; and, by means of the electric telegraph, intelligence can now be conveyed to any distance in a few seconds. Similar improvements and facilities distinguish the present from all former times, in almost every department of social and commercial life; and yet we continue to use the mode of writing which has been handed down to us from the remotest antiquity, (with but very slight changes in the forms of the letters,)—a mode which, by its complexity, obliges the readiest hand to spend at least six hours in writing what can be spoken in one! Is this right, fit, or necessary? The genius of the age answers, "No."

It is, however, in accordance with the law of human life and progress, that alphabetic writing, one of the earliest developments of human intelligence, and hence co-extensive with civilization, should be slow in receiving improvement. The inventions of modern times can be brought to maturity before they are very widely disseminated; but it is not so with one whose age cannot be counted, not even by centuries; which is known and practised throughout the world, and which, in all its minutest particulars, seems to be inwoven with the very fibres of our mental constitution.

But it is also in accordance with the law of human life and progress, that that which is defective and erroneous should be remodelled, and rendered conformable to reason and truth; and that that which is difficult should be made easy. In this age of intellectual and business activity, the want of an expeditious method of writing is universally felt. "Who that is much in the habit of writing," asks the *English Review*, "has not often wished for some means of expressing by two or three dashes of the pen, that which, as things are, it requires such an expenditure of time and labor to commit to paper? Our present mode of communication must be felt to be cumbersome in the last degree; unworthy of these days of invention; we require some means of bringing the operations of the mind and of the hand into closer correspondence."

The desideratum of a brief method of writing, six times as brief as longhand, and as legible, is supplied in Phonography, invented by Sir Isaac Pitman, of Bath, England, in 1837. In 1887 it celebrated its Jubilee, and it is used by hundreds of thousands of persons wherever the English language is spoken, with perfect fearlessness, for all the common purposes of writing. It is a system of Phonetic Shorthand, as rapid, and as intelligible, as speech itself; of which it is, as used in correspondence, an exact picture;

and as used in verbatim reporting, a perfect and intelligible outline. Phonography is based upon a correct and practical analysis of spoken language, and represents words as they are really pronounced.

The following facts may be taken as indications of the future general adoption of Phonography, or Pitman's Shorthand :—No one who is practically acquainted with the system ever thinks of employing longhand when writing to a person who has a knowledge of the phonetic shorthand alphabet. The alphabet of the system, and the ability to read it, may be acquired in three or four hours' study. The ability to write Phonography at the rate of twenty words per minute—the average rate at which longhand is written—may be acquired by anyone who can already write longhand, in one month, by practising from half an hour to an hour per day. By continued practice, increased facility is attained, and in six or twelve months, according to the dexterity of the writer, the student of the art is able to report a slow speaker verbatim, at the rate of a hundred words per minute. A few months' additional practice will enable him to write at the average rate of public speaking, which is one hundred and twenty words per minute.

We give below (by permission of Sir Isaac Pitman and Sons, of London, Bath, and New York) the phonographic alphabet of consonants, vowels, and diphthongs, with the principal abbreviating devices and rules for writing.

(Copyright in Great Britain and the United States.)

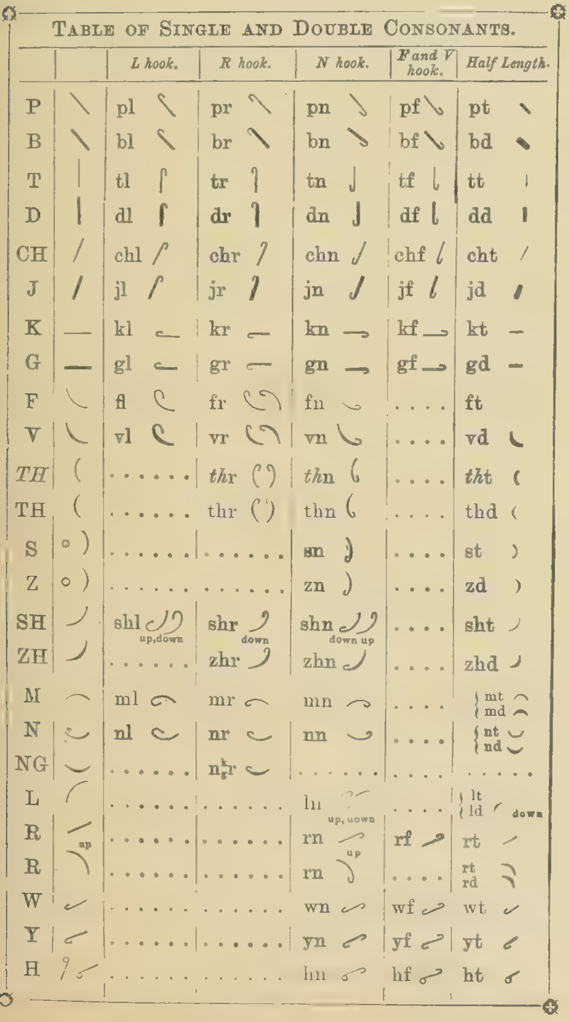
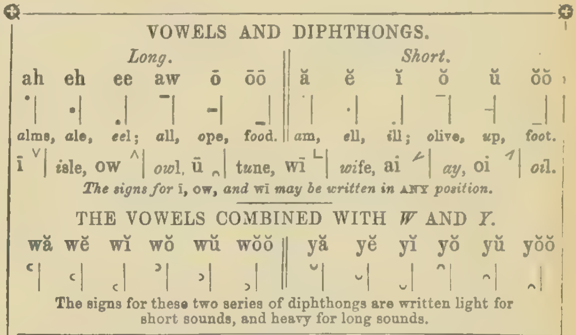


TABLE OF SINGLE AND DOUBLE CONSONANTS.

		L hook.	R hook.	N hook.	F and V hook.	Half Length.
P		pl	pr	pn	pf	pt
B		bl	br	bn	bf	bd
T		tl	tr	tn	tf	tt
D		dl	dr	dn	df	dd
CH		chl	chr	chn	chf	cht
J		jl	jr	jn	jf	jd
K		kl	kr	kn	kf	kt
G		gl	gr	gn	gf	gd
F		fl	fr	fn	....	ft
V		vl	vr	vn	....	vd
TH		......	*thr*	*thn*	....	*tht*
TH		......	thr	thn	....	thd
S		......	......	sn	....	st
Z		......	......	zn	....	zd
SH		shl up,down	shr down	shn down up	....	sht
ZH		......	zhr	zhn	....	zhd
M		ml	mr	mn	....	mt md
N		nl	nr	nn	....	nt nd
NG		......	n$^{k}_{g}$r	......	....	.....
L		......	......	ln up, down	....	lt ld down
R	up	......	......	rn	rf	rt
R		......	......	rn up	....	rt rd
W		......	......	wn	wf	wt
Y		......	......	yn	yf	yt
H		......	......	hn	hf	ht



VOWELS AND DIPHTHONGS.

Long.						Short.					
ah	eh	ee	aw	ō	ōō	ă	ĕ	ĭ	ŏ	ŭ	ŏŏ
alms,	ale,	eel;	all,	ope,	food.	am,	ell,	ill;	olive,	up,	foot.

ī isle, ow owl, ū tune, wī wife, ai ay, oi oil.

The signs for ī, ow, *and* wī *may be written in* ANY *position.*

THE VOWELS COMBINED WITH *W* AND *Y*.

wă wĕ wĭ wŏ wŭ wŏŏ ‖ yă yĕ yĭ yŏ yŭ yŏŏ

The signs for these two series of diphthongs are written light for short sounds, and heavy for long sounds.

Remarks on the Alphabet.—1. The names of the long vowels are contained in the illustrative words above. The short vowels should be called *at* or "short *ah*," *et* or "short *eh*," *it* or "short *ee*," *ot* or "short *awe*," *ut* or "short *uh*," *ŏŏt* or "short *oo*." A vowel placed above a horizontal consonant, is read BEFORE the consonant, and when written under is read AFTER the consonant. With perpendicular and sloping consonants, a vowel on the left-hand side is read BEFORE the consonant, and a vowel on the right-hand side is read AFTER the consonant.

2. *S* (or *z*) is also represented by a circle. At the beginning or end of a word it is to be placed on the right-hand side of a STRAIGHT down-stroke, and in a corresponding position with respect to any other straight letter. In the middle of words, and when joined to a curved letter, write it in the most convenient position. Make it double size for *ss*; as *pass, passes*. (See below).

3. *Ch* is written downward, and slopes little; as *cheese*.

4. The straight *r* is written upward, and slopes much; as *ray, rose*.

5. *L*, when standing alone, is written upward, as *lay, loo*; and *sh* downward, as *she*. These letters, when joined to others, may be written either up or down, as *tail, kneel*. The three places for vowels are reckoned from the *beginning* of the consonant, as "first," "second," and "third" place.

6. *Lt* may be written either up or down. *Ld* is written downward only.

7. *F* or *v*, when following a straight letter, is expressed by a final hook on the *right-hand* side of *t, d*, and the *upper* side of *k, g*, etc.; as *strife, crave*.

8. All the letters in columns 3, 4, 5, page 99, may be written half-length to express an additional *t* or *d*, and those in columns 3, 4, may have a final *n*-hook. All the letters at the bottom of page 99 may be hooked for *n*, and all except the heavy curves may be halved for *t, d*.

9. *H* may also be written by a small dot placed before the following vowel; as *happy*; or by the downstroke shortened to a tick; as *human*.

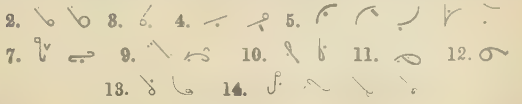
10. Write *st* by a loop about half as long as a consonant; as *step, taste*.

11. A loop two-thirds of a consonant represents *str*; as *master*.

12. A large or double-size circle *at the commencement of a word* represents *sw*; as *swim*.

13. *Ns* final, after a straight letter, is written by a circle on the *n*-hook side, as *pens*; and after a curve by a circle at the end of a hook; as *fans*.

14. The termination *tion* (*shon*) is expressed by a large final hook. After the circle-*s*, it is expressed by continuing the *s*-circle to the other side of the consonant; as *station, oppression, position, compensation*.



The English language contains forty-one distinct sounds; the alphabet of Phonography provides a sign for each sound. The phonographic alphabet contains twenty-four consonants, twelve vowels, and six diphthongs. The vowel and diphthong signs are dots, dashes, and angular marks; the upright stroke to which they are placed (the shorthand letter *t*) is introduced to show the position in which the vowel sign is written with respect to all consonants. When the consonants of the phonographic alphabet are joined, they are written without lifting the pen. The simple forms employed in the alphabet are varied by the addition of hooks and small circles, so as to express two, three, or even five letters in one stroke. Groups of consonants, such as *pr*, *pl*, *spr*, *st*, *stnd*, *strds*, in *pr*aise, *pl*ead, *spr*ing, *st*ep, *stand*, cu*stards*, are written with a single motion of the hand. Additional rules for abbreviation are given below, and we also present specimens of the three styles of Phonography—the Learner's, the Corresponding, and the Reporting—which only differ from each other in the number of abbreviating principles and contractions introduced.

RULES FOR WRITING, WITH ILLUSTRATIONS.

1. Write words as they are PRONOUNCED, not as they are SPELLED.

2. Make the consonants about one-sixth of an inch in length, as in the Alphabet. Reduce the size to one-eighth when facility in writing is acquired.

3. *L* and *r*, initial or final:—If equally convenient to the writer, the UP stroke is used when a vowel *follows;* as *lamb*, *rye*, *road*, *fellow*, *parry*, and the DOWN stroke when a vowel *precedes;* as *elm*, *air*. (See below.)

4. When a word begins with a vowel followed by *s* or *z*, or ends with a vowel preceded by *s* or *z*, use the STROKE form of the letter; as *ask*, *lazy*.

5. A vowel between two consonants is written thus:—A first-place vowel or a second-place LONG vowel, is put after the first consonant; as *talk*, *gate;* a second-place SHORT vowel or a third-place vowel is put before the second consonant; as *get*, *took*. This rule does not apply to the circle *s*.

6. *Wl* is vocalised by writing the vowel on the left-hand side; as *well*.

7. A full-sized and a half-sized consonant should not be joined unless they form an angle at the point of union. In such cases the double consonant (the half-sized one) should be resolved into its simple letters; as *lacked*.

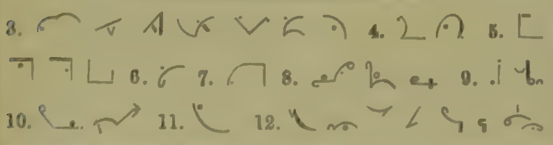
8. To express one of the long vowels, *ah*, *eh*, *ee*, BETWEEN the two letters of one of the *pl*, *pr*, series of consonants, write a small circle ABOVE or BEFORE the consonant; as, *careless*. The short vowels ă, ĕ, ĭ, are written by a small circle placed UNDER OR AFTER the consonant; as *term*. A *stroke-vowel* is struck THROUGH the consonant; as *school*.

9. *Prefixes;*—written near the following part of the word, but not joined. COM, CON, a dot at the commencement, as *commit;* INTER, INTRO, *nt* (half-length *n*), as *introduce*.

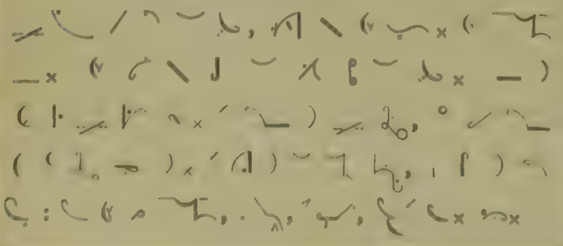
10. *Affixes;*—written near the preceding part of the word. ING, a dot at the end, as *speaking;* INGS, a short stroke, *mornings;* SELF, circle *s;* SHIP, *sh*.

11. A curved letter, when made twice its usual length, represents *tr*, *dr*, or *thr*, in addition to the primary letter; as *father*.

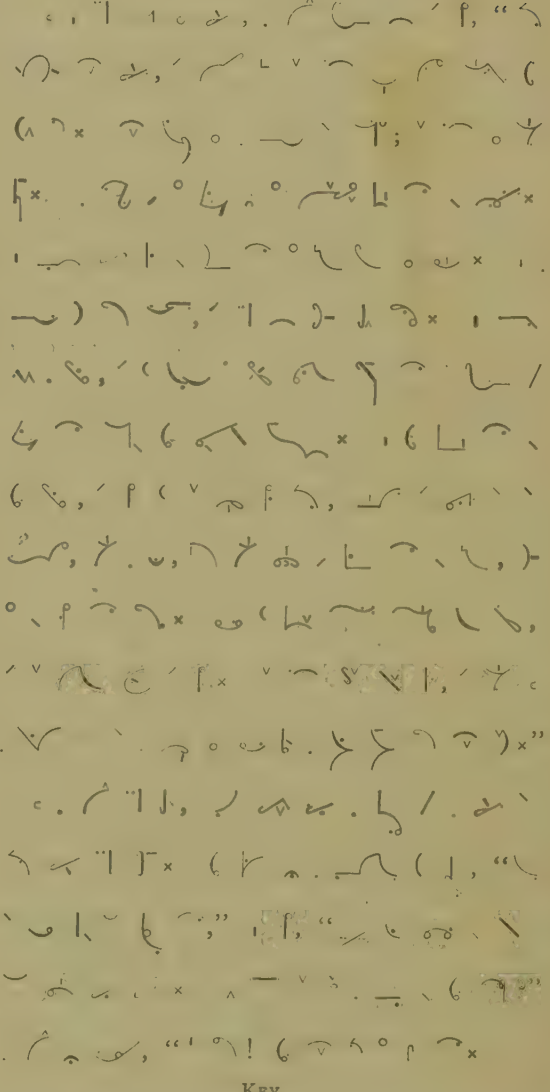
12. Grammalogues may be joined to make common phrases; as *I have*, *you may*. *The* may be expressed by a short slanting stroke joined to the preceding word, written either downward or upward; as *in the*, *which the;* and *he* by ı; as *for he*, *when he*. *Of the* is intimated by writing the words between which it occurs *near to each other;* as, *some of the men*.



THE LORD'S PRAYER.



Learner's Style.



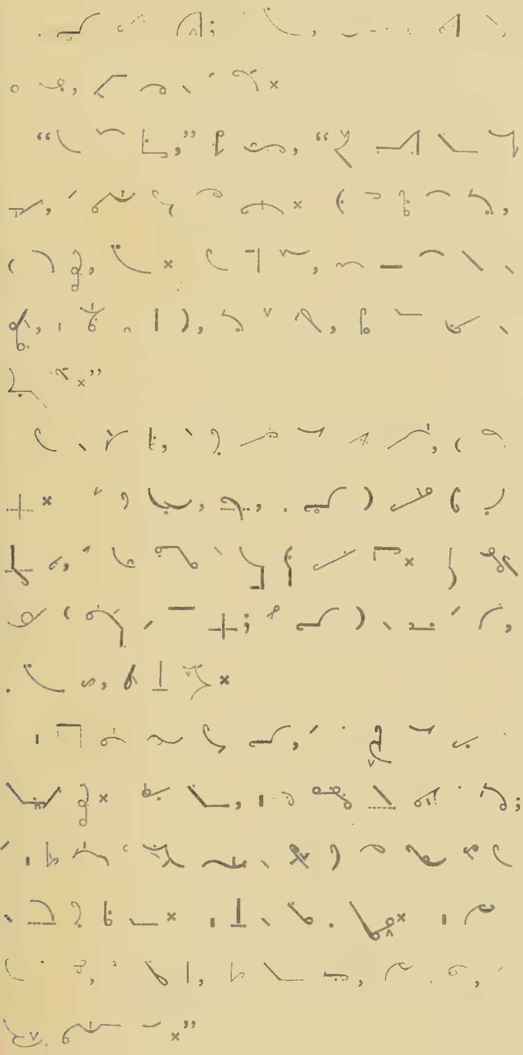
KEY.

When he had ended his story, the owl thanked him and said, "Hear also my story, and learn why I am no less unhappy than thou art. My father is the King of India; I am his only daughter. The magician who has changed you has likewise doomed me to misery. He came one day to ask me as wife for his son. But the King was very angry, and had him thrown down stairs. He kept about the place, and that evening a supposed slave brought me a drink which changed me into this horrible form. He then took me to this place, and said that I must stay here, ugly and hated of all animals, until the end, or until some one should take me to wife, so as to set me free. Since that time many months have passed, and I live alone and sad. I am blind by day, and only when the pale light of the moon is seen does the veil fall from my eyes."

When the owl had done, she wiped away the tears which the story of her woe had drawn. This tale made the Caliph think deeply. "If all things do not deceive me," he said, "our fate seems to be in some way alike. But how can I find the key to this mystery?" The owl made answer, "Oh, sir! this my heart has told me."

—*From "The Stork Caliph."*

Corresponding Style.



KEY.

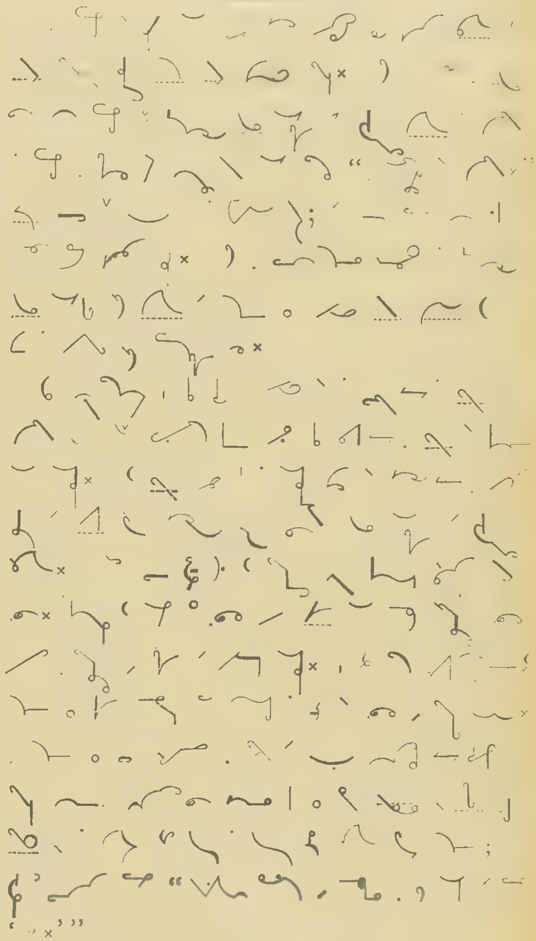
The girl wept aloud; and the father, sinking his head upon his knees, rocked himself to and fro.

"If I am taken," said the young man, "I shall be carried back into the country, and hung for that man's murder. They cannot trace me here, without your assistance, father. For aught I know, you may give me up to justice, but unless you do so, here I stop, till I can venture to escape abroad."

For two whole days, all three remained in the wretched room, without stirring out. On the third evening, however, the girl was worse than she had been yet, and the few scraps of food they had were gone. It was indispensably necessary that somebody should go out; and as the girl was too weak and ill, the father went, just at night-fall.

He got some medicine for the girl, and a trifle in the way of pecuniary assistance. On his way back, he earned sixpence by holding a horse; and he turned homewards with enough money to supply their most pressing wants for two or three days to come. He had to pass the public-house. He lingered for an instant, walked past it, turned back again, lingered once more, and finally slunk in.—*From " The Drunkard's Death." by Charles Dickens.*

Reporting Style.



KEY.

But the question of justice in our human relationships is not wholly solved either by the proper distribution or by the elimination of profit. There remains the even more important question as to the determining voice in the control and the development of the life of labor, a question the terms of which may be summed up in the phrase, "the enfranchisement of labor." Here again I enter on a thorny path; and again I call to my aid the example of the Scottish Wholesale Society. There the claim of the workers to exercise a determining voice in the conditions of their life and work is recognized by allowing them to elect a representative to their quarterly meetings.

This may not be very much, but it is at any rate the recognition of a great principle—a principle for which labor is now fighting wherever it can raise its head—the principle of democracy in industry. That principle rests on an indestructible element of human nature—the rational desire and right of every human being to have some voice in the control and development of his life. I cannot agree with those who say that production should be dominated solely by the consumer. It may be said that inasmuch as consumers are largely in excess of producers, the consumers, rather than the producers, should control and regulate industry. But that is the very root of the mischief—that the worker is daily exploited in order to maintain a host of consumers who produce nothing. The worker is ground betwixt the upper and nether mill-stones—on the one side the profit-making middle-man consumer, who makes it his special business to drive down prices to a level that will not afford a fair standard of life for the worker; and on the other side, what Carlyle calls the "Perfumed seigneur, who extracts the third nettle and calls it 'rent.'"—*From an address on " Co-Operation and Competition."*

ERRORS
THAT ARE
FREQUENT
—IN—
CONVERSATION.

Common Faults in Writing and Speaking.

MISTAKES
—IN—
GRAMMAR
WHICH ARE
OFTEN HEARD.

Superfluous Words, Improper Phrases, and Errors of Grammar.

MANY of the following expressions may be heard in the ordinary conversation of every day life. They indicate a lack of knowledge or want of care in the use of words which those who have been trained to the use of correct language immediately observe.

In this connection it may be said that one of the most important studies is that of Grammar, which should be vigorously pursued until the student can properly construct sentences. On that qualification, in many positions of life, hangs success. Without this training the individual is liable at any time to use those expressions which indicate deficiency in this branch of a primary education.

These phrases are especially common in the language of those who are unskilled in knowledge of grammar. The corrections will aid the student somewhat in the acquisition of a better method of expression, but while they do this it is not pretended that they teach this art. They simply direct attention to the importance of this subject as a branch of education, and point out by example those phrases which are often used incorrectly.

"It is *me*,"
should be
"It is *I*."

"I *done* that,"
should be
"I *did* that."

"I *seen* him"
should be
"I *saw* him."

"We enter *in*,"
should be
"We enter."

"This *'ere* one,"
should be
"This one."

"Is that *him*?"
should be
"Is that *he*?"

"Call *upon* him,"
should be
"Call *on* him."

"Do *like* I do,"
should be
"Do *as* I do."

"*Onec't* or twice,"
should be
"*Once* or twice."

"If I *was* him,"
should be
"If I *were he*."

"*In case* I win,"
should be
"*If* I win."

"Let you and *I*,"
should be
"Let you and *me*."

"That *there* one,"
should be
"That one."

"*Be* you cold?"
should be
"*Are* you cold?"

"Better than *me*,"
should be
"Better than *I*."

"How *fur* is it,"
should be
"How *far* is it."

"I *love* beefsteak,"
should be
"I *like* beefsteak."

"*Was* you there?"
should be
"*Were* you there?"

"Who *done* that?"
should be
"Who *did* that?"

"I *don't* think so,"
should be
"I think not."

"How *do* you *do*?"
should be
"How *are* you?"

"Give me *me* hat,"
should be
"Give me *my* hat."

"A *summer's* day,"
should be
"A *summer* day."

"I have *got back*,"
should be
"I have *returned*."

"Not as I know *of*,"
should be
"Not that I know."

"I am very *dry*,"
should be
"I am very *thirsty*."

"I have *saw* him,"
should be
"I have *seen* him."

"Both *of* these men,"
should be
"Both these men."

"*Who* do you wish?"
should be
"*Whom* do you wish?"

"I *had* rather do it,"
should be
"I *would* rather do it."

"He had *laid* down,"
should be
"He had *lain* down."

"What *are* the news?"
should be
"What *is* the news?"

"*Set* down and rest,"
should be
"*Sit* down and rest."

"See that *'ere* bird,"
should be
"See that bird."

"I *had* ought to go,"
should be
"I ought to go."

"They *was* talking,"
should be
"They *were* talking."

"*Me* and John saw it,"
should be
"John and *I* saw it."

"*Who* did you say?"
should be
"*Whom* did you say?"

"I *swapped* horses,"
should be
"I *traded* horses."

"Are you *uns* going?"
should be
"Are you going?"

"*Such another* error,"
should be
"*Another such* error."

"I can't *stand* it,"
should be
"I cannot *endure* it."

"He was *to* Henry's,"
should be
"He was *at* Henry's."

"He travels *rapid*,"
should be
"He travels *rapidly*."

"As soon *as ever* I can,"
should be
"As soon *as* I can."

"The crops look *finely*,"
should be
"The crops look *fine*."

"*Don't* never do that,"
should be
"Never do that."

"Can you *learn* me?"
should be
"Can you *teach* me?"

"I *have got* the book,"
should be
"I *have* the book."

"I *enjoy* good health,"
should be
"I *have* good health."

"I'll *bet* you'll go,"
should be
"I *think* you will go."

"Let me dress *me*,"
should be
"Let me dress *myself*."

"The man was *beat*,"
should be
"The man was *beaten*."

"He is as good as *him*,"
should be
"He is as good as *he*."

"They returned *back*,"
should be
"They returned."

"The cloth was *wove*,"
should be
"The cloth was *woven*."

"Between you and *I*,"
should be
"Between you and *me*."

"It is three *foot* long,"
should be
"It is three *feet* long."

"She sings *beautiful*,"
should be
"She sings *beautifully*."

"He *won't* never do it,"
should be
"He *will* never do it."

"He made a *dicker*,"
should be
"He made a *bargain*."

"He fell *on* the floor,"
should be
"He fell *to* the floor."

"Cover *over* the well,"
should be
"Cover the well."

"If I am *not mistaken*,"
should be
"If I *mistake not*."

"He is *up on* the house,"
should be
"He is *on* the house."

"I cannot by *no* means,"
should be
"I cannot by *any* means."

"The stone sinks *down*,"
should be
"The stone sinks."

"It was *her* who called,"
should be
"It was *she* who called."

"There *was* some men,"
should be
"There *were* some men."

"He must stay *to* home,"
should be
"He must stay *at* home."

"First *of all* let me say,"
should be
"First, let me say."

"*New* furnished rooms,"
should be
"*Newly* furnished rooms."

"Do you see *them* men?"
should be
"Do you see *those* men?"

"*Is* your hands cold?"
should be
"*Are* your hands cold?"

"*Above* a year since,"
should be
"*More than* a year since."

"These kind of apples,"
should be
"These *kinds* of apples,"
or
"*This* kind of apples."

"He is *in under* the wall,"
should be
"He is *under* the wall."

"I *toted* him across,"
should be
"I *carried* him across."

"I came from *over yer*,"
should be
"I came from *yonder*."

"*Lay* down or *set* down,"
should be
"*Lie* down or *sit* down."

"Two *spoonsful* of tea,"
should be
"Two *spoonfuls* of tea."

"I'll give you *fits*,"
should be
"I will *attend* to you."

"A *new pair* of boots,"
should be
"A *pair of* new boots."

"The *best* of the two,"
should be
"The *better* of the two."

"I have *lit* the fire,"
should be
"I have *lighted* the fire."

"I *belong* to the church,"
should be
"I am a *churchmember*."

"He *climbed up* the hill,"
should be
"He *climbed* the hill."

"What *beautiful* sauce,"
should be
"What *excellent* sauce."

"I *had* rather ride,"
should be
"I *would* rather ride."

"Very *warmish* weather,"
should be
"Very *warm* weather."

"*There is* a great many,"
should be
"*There are* a great many."

"I *only want* five dollars,"
should be
"I *want only* five dollars."

"You *hadn't ought* to go"
should be
"You *ought not* to go."

"*There's lots* of them,"
should be
"*There are many* of them."

"I have *rode* with him,"
should be
"I have *ridden* with him."

"I saw the *Miss Browns*,"
should be
"I saw the *Misses Brown*."

"Peaches were *plenty*,"
should be
"Peaches were *plentiful*."

"Continue *on* in this way,"
should be
"Continue in this way."

"*Don't* give him no more,"
should be
"Give him no more."

"Walter and *me* went down,"
should be
"Walter and *I* went down."

"*Who* does this belong to,"
should be
"*Whom* does this belong to."

"*As* far as I am concerned,"
should be
"*So* far as I am concerned."

"He had *near* ten dollars,"
should be
"He had *nearly* ten dollars."

"We had an *awful nice* time,"
should be
"We had a *delightful* time."

"He rose *up* from his seat,"
should be
"He rose from his seat."

"He came *ladened* with honor,"
should be
"He came *laden* with honor."

"I expected *to have seen* him,"
should be
"I expected *to see* him."

"Give me a *little bit of* piece,"
should be
"Give me a *small* piece."

"They despised *one another*,"
should be
"They despised *each other*."

"I was *tickled* to see him"
should be
"I was *pleased* to see him."

"He is heavier than I *be*,"
should be
"He is heavier than I *am*."

"When we *was* living here,"
should be
"When we *were* living here."

"He is better than you *be*,"
should be
"He is better than you *are*."

"Similarity *with* each other,"
should be
"Similarity *to* each other."

"When I get *off from* a car,"
should be
"When I get *off* a car."

"Do you *mean to* do that?"
should be
"Do you *intend* to do that?"

"Either of *them are* rich,"
should be
"Each of *them is* rich."

"I have *a couple of dollars*,"
should be
"I have *two* dollars."

"It spread *all over* the town,"
should be
"It spread *over all* the town."

"If I *was him* I would do it,"
should be
"If I *were he* I would do it."

"I'll be blamed if I can tell,"
should be
"I cannot tell."

"Who is there?" "It is *me*,"
should be
"Who is there?" "It is *I*."

"I *took* you for another,"
should be
"I *mistook* you for another."

"His faith has been *shook*,"
should be
"His faith has been *shaken*."

"He died *with* consumption,"
should be
"He died *of* consumption."

"You are stronger than *me*,"
should be
"You are stronger than *I*."

"I *reckon I'll* go to-morrow,"
should be
"I *intend to* go to-morrow."

"I *guess I'll go* to-morrow,"
should be
"I *think of going* to-morrow."

"He has a *tarnal lot* of potatoes,"
should be
"He has a *large quantity of* potatoes."

"Make haste and dress *you*,"
should be
"Make haste and dress *yourself*."

"The two *first men* are the strongest,"
should be
"The *first two* men are the strongest."

"She sang *to* the Baptist church,"
should be
"She sang *at* the Baptist church."

"*Them is* large enough for you"
should be
"*Those are* large enough for you."

"We *won't* say one *single* word,"
should be
"We *will not* say one word."

"He is *down in* the basement,"
should be
"He is *in* the basement."

"His manner admits *of* no excuse,"
should be
"His manner admits no excuse."

"Received *of* John Brown five dollars,"
should be
"Received *from* John Brown five dollars."

"No other means *but* this was left,"
should be
"No other means *than* this was left."

"They will go *from* thence next week,"
should be
"They will go thence next week."

"From *now* till Christmas,"
should be
"From *this time* till Christmas."

"He has *got over* his trouble,"
should be
"He has *recovered from* his trouble."

"I *know* better; that ain't so,"
should be
"Pardon me, I *understand* differently."

"I know little *or nothing* of it,"
should be
"I know little, *if anything*, of it."

"He has four *brother-in-laws*,"
should be
"He has four *brothers-in-law*."

"I know *Mr. and Mrs. Dr.* Brown,"
should be
"I know *Dr. and Mrs.* Brown."

"It's *funny* how long she *stays* sick,"
should be
"It is *singular* that she should *remain* sick so long."

"You *lie*; he got *tight*,"
should be
"You are *mistaken*; he was *drunk*."

"*I'll be goll darned if* I know where it is,"
should be
"I do not know where it is."

"*Somehow or another* I'm a failure,"
should be
"*For some reason* I am always a failure."

"Henry and John *is* coming,"
should be
"Henry and John *are* coming."

"He dropped *down* into the water,"
should be
"He dropped into the water."

"They differ *among one another*,"
should be
"They differ *among themselves*."

"Take three-fourths; give me the the *balance*,"
should be
"Take three-fourths; give me the *remainder*."

"I see him *every now and then*,"
should be
"I see him *occasionally*."

"I never play if I can *help it*,"
should be
"I never play if I can *avoid it*."

"*Look out* or you'll get hurt,"
should be
"*Be careful* or you'll get hurt."

"Should have gloves like *Henry has*,"
should be
"Should have gloves like *Henry's*."

"I'd like *for you* to go,"
should be
"I would be pleased to *have you* go."

"May be I *mought* or I *moughtn't*,"
should be
"I *may* or I *may not*."

"I never *see such a slew* of people before,"
should be
"I never *saw such a large number* of people before."

"His works are approved *of by* many,"
should be
"His works are approved *by* many."

"I *don't* know nothing about it,"
should be
"I know nothing about it."

"He has a *heap* of cattle,"
should be
"He has a *large number* of cattle."

"He had a *right smart crop* of corn last year,"
should be
"He had a *large crop* of corn last year."

"He has a good *bit* of money,"
should be
"He has a good *deal* of money."

"I went to New York, *you know*, and when I *came back*, *you see*, I commenced attending school,"
should be
"I went to New York, and when I *returned* I commenced attending school."

Dictionary of Synonyms.

SEVERAL THOUSAND SYNONYMOUS WORDS.

For the use of Writers and Speakers.

QUITE a common fault is that of using, when writing, the same word several times in a sentence. To avoid this inelegant repetition, the writer should give careful attention to the selection of different words having a similar meaning. Observe the following:

Example.

He is *accurate* in figures, *accurate* in grammar, *accurate* in spelling, *accurate* in writing.

IMPROVED.

He is *accurate* in figures, *correct* in grammar, *exact* in spelling, *precise* in writing.

See the word *accurate* in the dictionary, accompanied by synonymous words.

Example.

He made an excellent *address* in the morning, and his colleague made an excellent *address* in the evening.

IMPROVED.

He made an excellent *address* in the morning, and his colleague entertained the assemblage with an eloquent *speech* in the evening.

Example.

The patient *suffered* untold *agony* for years; during which time he *suffered* not only *agony* of body, but *agony* of mind.

IMPROVED.

The patient *suffered* untold *agony* for years; during which time he *endured* not only *torture* of body, but *anguish* of mind.

A

Abase—humble, lower, degrade, depress, disgrace.

Abate—lessen, reduce, subside, decrease, diminish.

Abbreviate—abridge, curtail, condense, compress, empitomize, lessen, reduce, shorten.

Abhor—abominate, detest, hate, loathe.

Ability—capacity, power, skill, means, talent.

Able—capable, competent.

Abode—dwelling, habitation, residence.

Abominate—abhor, detest, hate, loathe.

Abridge—contract, diminish, lessen, shorten.

Absent—abstracted, inattentive, heedless.

Absorb—engross, engulf, imbibe, swallow.

Abstain—forbear, refrain, withhold.

Abstruse—hidden, obscure, difficult.

Absurd—foolish, unreasonable, preposterous, ridiculous, silly.

Abundant—ample, copious, plentiful.

Abusive—insolent, offensive, scurrilous, disgraceful.

Accede—acquiesce, agree, consent, assent, comply, yield.

Accept—admit, receive, take.

Acceptable—agreeable, grateful, welcome.

Accession—addition, augmentation, increase.

Accommodate—adjust, adapt, serve, suit, fit.

Accomplice—abettor, ally, assistant, accessory, associate.

Accomplish—complete, effect, achieve, fulfill, execute, realize, finish.

Account—explanation, narration, description, recital.

Accumulate—heap, collect, gather, amass.

Accurate—precise, exact, correct.

Accuse—asperse, arraign, censure, impeach, defame, calumniate, detract, vilify.

Achieve—execute, complete, fulfill, realize, accomplish, effect.

Acknowledgment—confession, concession.

Acknowledge—confess, own, avow, grant.

Acquaint—inform, communicate, disclose, make known.

Acquiesce—comply, yield, consent, agree, assent.

Acquire—gain, attain, procure, win, obtain.

Acquirement—attainment, gain.

Acquit—free, pardon, forgive, discharge, clear.

Active—quick, nimble, agile, alert, prompt, industrious, busy, brisk, vigorous.

Actual—real, certain, positive.

Actuate—impel, induce, move.

Acute—sharp, keen, subtle, piercing, shrewd, pointed, penetrating.

Adapt—suit, fit, adjust, accommodate.

Add—join to, put to, increase.

Address—speech, utterance, ability, courtship, skill, direction.

Addition—augmentation, accession, increase.

Adhere—stick, cleave, hold, attach.

Adept—apt, quick, skillful, expert.

Adherent—disciple, follower, partisan.

Adhesion—sticking, attachment, adherence.

Adjacent—close, near, adjoining, contiguous.

Adjourn—postpone, defer, delay.

Adjust—settle, fix, suit, adapt, accommodate.

Administer—give, execute, dispense, manage, supply, serve.

Admiration—regard, esteem, wonder, surprise, amazement.

Admission—entrance, access, admittance.

Admit—allow, permit, tolerate, concede, grant.

Admonition—warning, advice, counsel, reproof.

Adorn—deck, embellish, beautify.

Adroit—agile, dexterous, clever, skillful.

Adulterate—corrupt, pollute, debase, defile.

Advancement—progression, improvement.

Advantage—profit, benefit, use, good.

Adventure—chance, casualty, contingency; incident, occurrence.

Adversary—opponent, antagonist, enemy.

Adverse—unfortunate, hostile, contrary, repugnant, opposed.

Advert—notice, turn, regard, allude.

Advise—consult, consider, deliberate, admonish.

Advocate—plead, argue, defend, support.

Affability—civility, courteousness, urbanity.

Affable—civil, courteous, urbane, pleasing.

Affair—business, concern, matter, transaction.

Affect—aim, assume, move, pretend, arrogate

Affecting—feeling, touching, pathetic.

Affection—love, fondness, attachment, kindness, tenderness.

Affiliate—adopt, receive, initiate, associate.

Affinity—relationship, kindred, alliance, conformity, attraction.

Affirm—assure, assert, aver, declare, protest.

Affliction—pain, trouble, distress, grief, sadness, sorrow, tribulation, bereavement, calamity.

Affluence—plenty, abundance, riches, opulence, wealth, concourse, influx.

Afford—yield, grant, give, impart, spare.

Affright—alarm, dismay, shock, terrify, appall, frighten, dishearten, intimidate.

Affront—provoke, outrage, insult, offend.

Afraid—fearful, terrified, timid, timorous.

Aged—elderly, old, senile, advanced in years.

Agent—representative, deputy.

Aggregate—mass, collect, accumulate.

Agile—alert, active, lively, quick, sprightly, nimble, brisk.

Agitate—shake, disturb, move, discuss.

Agitation—disturbance, trepidation, tremor.

Agony—pain, distress, torture, anguish, suffering.

Agree—accede, acquiesce, assent, consent, concur, comply.

Agreeable—suitable, acceptable, pleasing, grateful.

Agreement—harmony, accordance, covenant, concurrence, contract, bargain.

Aid—assist, help, succor, relieve.

Aim—aspire, endeavor, level, point.

Air—aspect, manner, appearance, look, mien.

Alarm—fear, consternation, dread, apprehension, fright, terror, summons, surprise.

Alienate—transfer, withdraw, estrange.

Allege—adduce, affirm, advance, assert.

Alleviate—ease, abate, lessen, mitigate, relieve, diminish, soothe, lighten.

Alliance—coalition, union, combination, league, confederacy.

Allot—distribute, apportion, assign, appoint.

Allowance—wages, pay, stipend, salary, permission, concession, grant.

Allude—refer, suggest, hint, intimate.

Allure—tempt, entice, seduce, decoy, attract.

Alter—change, vary, modify, rearrange.

Always—ever, perpetually, constantly, continually, incessantly.

Amass—gather, heap, collect, accumulate.

Amazement—astonishment, surprise, wonder, admiration.

Ambiguous—obscure, doubtful, equivocal, uncertain.

Amenable—answerable, responsible, accountable.

Amend—correct, improve, better, rectify, reform, mend.

Amends—recompense, restoration, reparation, restitution.

Amiable—lovely, kind, charming, delightful, obliging.

Ample—large, extended, spacious, copious, abundant, plenteous.

Amusement—entertainment, diversion, sport, pastime, recreation.

Angry—passionate, hot, irascible, hasty.

Anguish—pain, distress, suffering, agony.

Animate—cheer, enliven, exhilarate, impel, incite, inspire, urge, encourage.

Animation—life, spirits, liveliness, buoyancy, gayety, vivacity.

Animosity—hatred, enmity, malignity, hostility.

Annex—attach, affix, add, subjoin.

Announce—proclaim, declare, advertise, publish.

Annul—destroy, revoke, abolish, cancel, repeal, annihilate.

Answer—reply, response, rejoinder.

Answerable—amenable, accountable, responsible.

Antagonist—enemy, foe, opponent, adversary.

Antecedent—previous, former, anterior, preceding, prior, foregoing.

Antipathy—aversion, abhorrence, dislike, detestation, hatred.

Anxiety—caution, care, perplexity, solicitude, uneasiness, disquietude.

Apathy—unfeelingness, indifference, insensibility, unconcern.

Aperture—cavity, opening.

Apology—defense, plea, excuse.

Apparent—evident, clear, plain, visible, distinct.

Appeal—invoke, refer, call upon.

Appearance—aspect, look, air, manner, mien, semblance.

Appease—calm, soothe, pacify, allay, assuage, tranquilize.

Applaud—praise, approve, extol, commend.

Applause—acclamation, shouting, approval.

Appoint—allot, fix, provide, order, prescribe, ordain, depute, constitute.

Appraise—value, estimate.

Appreciate—value, esteem, estimate, prize.

Apprehension—terror, alarm, fear, seizure, dread, suspicion, fright.

Apprise—inform, acquaint, disclose.

Approach—admittance, access, avenue, passage.

Approbation—approval, concurrence, consent, sanction, confirmation.

Appropriate—assume, usurp, set apart.

Appropriate—peculiar, exclusive, adapted.

Approve—allow, like, applaud, esteem, commend.

Arbitrator—judge, umpire, arbiter.

Archives—annals, records.

Ardent—hot, eager, passionate, fervent, fiery, vehement.

Arduous—hard, difficult, laborious.

Argument—proof, reason, dispute.

Arise—mount, ascend, rise, stand up.

Arraign—charge, accuse, impeach.

Arrange—place, dispose, class, range.

Arrogance—assumption, pride, self-conceit, haughtiness, presumption.

Artful—crafty, artificial, deceitful, cunning, dexterous.

Articulate—speak, pronounce, utter.

Artifice—deception, imposition, stratagem, cheat, deceit, finesse.

Attitude—posture, gesture.

Attract—charm, captivate, win, allure, draw, entice.

Attractions—, charms, allurements, enticements.

Audacity—impudence, boldness, hardihood, effrontery.

Auspicious—favorable, propitious, prosperous, lucky, fortunate.

Authentic—genuine, authorized, true.

Authority—power, dominion, force, sway, influence, ascendency.

Avarice—greed, covetousness, cupidity.

Averse—loth, unwilling, reluctant, repugnant, unfortunate, unfavorable.

Aversion—dislike, repugnance, antipathy, abhorrence, detestation.

Avidity—eagerness, greediness.

Avocation—calling, trade, profession, office, business, employment, occupation.

Avoid—shun, elude, eschew.

Avow—own, confess, recognize, acknowledge.

Awake—rouse, provoke, excite.

Awe—fear, dread, reverence.

B

Babbling—idle talk, loquacity, chattering, prattling.

Backward—loth, unwilling, reluctant, averse.

Baffle—confound, defeat, disconcert, elude, confuse.

Balance—settle, adjust, regulate, equalize.

Banter—taunt, ridicule, deride, rally, joke, jest.

Bare—stripped, naked, destitute, uncovered, unadorned.

Bargain—purchase, cheapen, contract, buy.

Base—mean, low, vile.

Bashful—shy, modest, diffident, timid.

Basis—foundation, pedestal, base, ground.

Bastard—spurious, illegitimate.

Battle—combat, fight, engagement.

Bear—carry, bring forth, support, suffer, endure, sustain, undergo.

Beat—hit, strike, defeat, overthrow.

Beau—sweetheart, gallant, dandy, fop.

Beautiful—handsome, fine.

Beautify—embellish, decorate, adorn, deck, ornament.

Becoming—suitable, graceful, comely, decent, befitting, meet, fit.

Beg—crave, beseech, entreat, ask, request, implore, solicit, supplicate.

Begin—originate, enter upon, commence.

Beguile—delude, mislead, amuse, deceive, impose upon.

Behavior—conduct, carriage, deportment, manner, demeanor, address.

Behold—see, look, observe, view.

Beholder—spectator, looker on, observer.

Belief—credit, faith, trust, certainty, confidence, reliance, conviction, opinion, assent.

Below—under, beneath.

Bend—lean, incline, distort, bow, subdue.

Beneath—under, below.

Bequeath—devise, give by will.

Beseech—solicit, crave, implore, beg, entreat, request, urge, supplicate.

Bestow—grant, confer, give, present.

Better—improve, mend, reform, ameliorate.

Blame—reprove, reproach, condemn, censure, reprehend, inculpate, upbraid.

Blameless—unblemished, faultless, innocent, guiltless, spotless, irreproachable.

Blast—desolate, destroy, wither up, split.

Blemish—flaw, spot, defect, fault, speck.

Blunt—dull, uncouth, insentient, abrupt.

Blunder—error, mistake.

Boaster—braggard, braggart, braggadocio, vaunter, blusterer.

Boasting—parade, ostentation, vaunting.

Boisterous—violent, furious, impetuous.

Bold—courageous, daring, fearless, impudent, insolent, audacious.

Bondage—servitude, slavery, confinement, imprisonment.

Border—edge, verge, rim, brim, margin, brink, side.

Bore—pierce, penetrate, perforate.

Bound—define, confine, restrict, terminate, limit, circumscribe.

Bounty—liberality, benevolence, generosity, beneficence.

Brave—bold, daring, heroic, undaunted, courageous, intrepid, fearless.

Breach—gap, chasm, break, opening.

Break—destroy, batter, dissolve, rend, tame, demolish, shatter.

Breaker—surge, billow, wave, sand-bank, covered rock.

Brief—short, concise, succinct, compendious, summary, epitomized.

Bright—clear, shining, sparkling, brilliant, glistening, glittering, lucid, resplendent..

Brilliancy—brightness, radiance, splendor, luster.

Broad—far-reaching, ample, extensive, large, wide.

Broil—fight, quarrel, altereation, affray.

Bruise—break, crush, squeeze, pound, compress.

Build—erect, establish, construct, found.

Bulk—greatness, largeness, size, extent, magnitude, dimensions.

Burden—load, freight, weight, cargo.

Burning—ardent, fiery, scorching, hot.

Burst—break, rend, crack, split.

Business—trade, occupation, calling, work, avocation, profession, employment.

Bustle—disorder, hurry, tumult, confusion.

But—except, still, however, save, nevertheless, yet, notwithstanding.

Butchery—havoc, slaughter, carnage, massacre.

Buy—procure, bargain, obtain, purchase.

C

Cabal—coalition, league, combination, conspiracy, intrigue, plot.

Calamity—mishap, disaster, misfortune.

Calculate—count, number, compute, reckon, estimate.

Call—exclaim, cry, invite, name, summon, subpœna.

Calling—trade, occupation, profession, business, employment, avocation.

Calm—soothe, compose, tranquilize, pacify, appease, assuage, allay.

Cancel—erase, destroy, abolish, repeal, annul, revoke.

Candid—frank, open, artless, honest, ingenuous.

Capable—able, fitted, competent, qualified, skillful.

Capacity—capability, faculty, ability, genius, talent.

Caprice—fancy, humor, freak, whim, notion.

Capricious—notional, variable, fickle, changeable, fantastical, whimsical.

Captivate—charm, enslove, attract, enchant, enrapture, take prisoner, fascinate.

Captivity—servitude, bondage, confinement, imprisonment.

Capture—prize, seizure.

Care—anxiety, solicitude, regard, attention, management, concern, disquietude, worry.

Careful—cautious, solicitous, attentive, provident, guarded, prudent, circumspect.

Careless—heedless, thoughtless, remiss, inattentive, negligent, unconcerned.

Caress--fondle, endear, embrace, stroke, soothe.

Carnage—massacre, butchery, slaughter.

Carriage—manner, behavior, deportment, mien, demeanor, walk, bearing.

Carry—transport, convey, bear.

Cast—throw, hurl, turn, direct, fling.

Catch—snatch, seize, lay hold of, grasp, capture, grip.

Cause—origin, source, reason, inducement.

Caution—advice, warning, notice, admonition, care, solicitude, circumspection.

Cautious—careful, wary, watchful, prudent, circumspect.

Cease—leave off, desist, stop, discontinue.

Celebrated—honored, illustrious, famous, renowned.

Celebrate—praise, extol, commend, perpetuate.

Censure—rebuke, reprimand, condemnation, reproach, stricture, blame.

Ceremony—form, rite, observance.

Certain—manifest, actual, real, sure, constant.

Chagrin—vexation, mortification, fretfulness.

Challenge—demand, defy, claim, call, accuse, object, except.

Chance—hazard, casual, fortuitous.

Change—alteration, variety, mutation, conversion, vicissitude.

Changeable—uncertain, variable, fickle, mutable, inconstant, unsteady.

Character—manner, reputation, description, letter, mark, quality.

Charity—kindness, benevolence, good-will, liberality, beneficence, generosity.

Charm—attract, bewitch, delight, enrapture, captivate, fascinate.

Chasten—correct, punish, afflict, chastise.

Chasteness—purity, continence, simplicity, chastity.

Chastise—correct, afflict, punish.

Chattels—effects, movable goods.

Cheat—fraud, deception, deceit, stratagem, imposition.

Cheer—incite, comfort, gladden, encourage, exhilarate.

Cheerfulness—mirth, gladness, liveliness, sprightliness, gayety, jollity, comfort.

Cherish—help, shelter, nurture, warm, foster.

Chide—scold, rebuke, reprove, reprimand.

Chiefly—mainly, principally, particularly, especially.

Childish—simple, puerile, trifling.

Childhood—infancy, minority.

Children—offspring, issue, progeny.

Choke—stifle, smother, suffocate.

Choice—selection, election, option.

Choose—prefer, select, pick, elect.

Circulate—spread, pass, diffuse, propagate.

Circumscribe—limit, confine, enclose, bound.

Circumstance—event, incident, state, situation, condition.

Circumspect—watchful, wary, cautious, particular, vigilant, prudent.

Circumstantial—minute, particular, incidental, accidental.

Civil—obliging, polite, affable, courteous, complaisant, polished, well-bred.

Civilization—refinement, culture.

Claim—demand, pretension, right.

Clandestine—secret, hidden, private.

Class—division, order, degree, rank.

Cleansing—purifying, purging, cleaning.

Clear—free, pure, acquit, absolve, discharge, satisfy, vindicate, apparent, evident, obvious.

Clearly—distinctly, lucidly, plainly, manifestly, obviously, visibly.

Clemency—mercy, mildness, lenity, kindness.

Clever—adroit, skillful, ready, expert.

Climb—mount, scale, ascend.

Cling—stick, hold, cleave, clasp, hang.

Close—shut, firm, compact, concise, confined, near.

Clothes—raiment, garments, covering, attire, habiliments, apparel.

Clouded—obscured, variegated, dark, gloomy, overcast, sullen.

Clumsy--awkward, unhandy, uncouth, bungling.

Coadjutor—assistant, colleague, ally.

Coalition—conspiracy, league, union, combination.

Course—gross, inelegant, rough, rude, vulgar, unrefined.

Coax—flatter, wheedle, fawn, cajole.

Coerce—force, compel, restrain.

Cognomen—name, appellation, denomination.

Coherent—consistent, adhesive, tenacious.

Coincide—harmonize, agree, concur.

Cold—reserved, chill, frigid, shy, unaffecting.

Colleague—ally, associate, partner, coadjutor.

Collected—calm, placid, unruffled, composed, gathered.

Collection—gathering, contribution, assemblage, group.

Colloquy—dialogue, conference, talk.

Color—dye, hue, tint, paint, tinge.

Combination—union, league, coalition, conspiracy, alliance, confederacy.

Comely—graceful, handsome, agreeable.

Comfort—solace, console, encourage, enliven.

Comfortless—wretched, desolate, forlorn

Comic—funny, ludicrous, ridiculous, laughable.

Command—direction, behest, precept, order, injunction.

Commanding—dictatorial, imperative, authoritative, imperious.

Commence--undertake, originate, begin.

Commend—praise, recommend, extol, applaud, approve, laud.

Commensurate—sufficient, adequate, equal; proportionate.

Comment—utterance, explanation, exposition, annotation, note, observation, elucidation, remark.

Commiseration—feeling for, pity, compassion, sympathy, condolence.

Commission—authorize, enable, empower.

Commodious—fit, suitable, convenient.

Commodity—goods, merchandise, wares.

Common—mean, vulgar, frequent, low, general, ordinary, usual.

Commotion—perturbation, disturbance, tumult.

Communicate—tell, report, disclose, make known, impart, reveal.

Communication—commerce, intercourse, conference.

Communion—fellowship, union, converse, intercourse.

Commute—exchange, barter.

Compact—contract, agreement, covenant, firm, solid, close.

Companion—ally, accomplice, associate, comrade, friend, confederate, partner.

Company—assembly, band, crew, corporation, congregation, association.

Compass—attain, enclose, invest, besiege, environ, encircle, consummate.

Compassion—tenderness, pity, sympathy, commiseration.

Compensation—pay, amends, reward, remuneration, requital.

Competent—suitable, fitted, able, qualified, capable, efficient, skillful, effective.

Competition—rivalry, contest, emulation.

Complaining—lamenting, murmuring, bemoaning, bewailing, regretting, repining.

Complaisant--agreeable, affable, courteous, civil.

Complete—conclude, fulfill, terminate, effect, accomplish, finish, consummate, execute.

Complex—intricate, complicate, compound.

Compliment—extol, flatter, congratulate, praise.

Comply—agree, accord, accede, assent, yield, acquiesce, consent.

Compose—put together, form, settle, soothe, calm, quiet, compound.

Comprehend—appreciate, embrace, include, understand, comprise, conceive.

Compress—condense, squeeze, bind.

Compulsion—constraint, force, restraint, coercion.

Compunction—regret, penitence, remorse, repentance, contrition.

Compute—count, number, rate, estimate, calculate.

Concede—yield, grant, allow, deliver, admit, surrender.

Conceal—hide, disguise, cover, secrete.

Conceit—imagination, fancy, notion, freak.

Conceited—vain, proud, egotistical, opinionated.

Conception—perception, knowledge, fancy, idea, imagination, notion

Concern—care, interest, business, affair, regard, matter

Concert—contrive, manage, adjust, consult.

Conciliate—win, reconcile, propitiate.

Conglude--finish, terminate, close.

Conclusion—termination, inference, end.

Conclusive—convincing, decisive.

Concord—harmony, agreement, unity, amity, peace.

Concur—agree, coincide, approve, acquiesce.

Condemn—sentence, doom, blame, reproach, reprove.

Condense—abbreviate, shorten, contract.

Condescension—humility, submission, deference.

Condition—rank, state, compact, bond, case, situation, stipulation.

Condolence—compassion, commiseration, sympathy.

Conduce—conduct, tend, lead, contribute.

Conduct—management, behavior, guidance, deportment.

Confederate—ally, accomplice, associate.

Confer—give, bestow, discourse, grant.

Confess--acknowledge, grant, own, admit, avow, recognize, disclose.

Confide—rely, trust, repose, depend.

Confident—impudent, bold, positive, dogmatical, absolute, assured.

Confined—limited, shut up, circumscribed, restrained, contracted, imprisoned.

Confirm—corroborate, establish, strengthen.

Conflict—contest, contention, fight, agony, combat, struggle, warfare, pang.

Conform—submit, yield, comply.

Confuse—stupefy, embarrass, confound, abash, disorder, perplex.

Congruity—agreement, consistency.

Conjecture—guess, think, belief, surmise.

Connected—joined, united, related.

Connection—intercourse, union, commerce, association, communion.

Conquer—subdue, vanquish, overcome, surmount.

Conscious—aware, sensible, apprised.

Consent—yield, agree, assent, comply, acquiesce, accede.

Consequence—result, inference, effect.

Consequently—hence, accordingly, therefore, wherefore.

Consider—ponder, deliberate, regard, reflect.

Consign—entrust, commit, transfer, make over.

Consistent—agreeing, consonant, accordant, firm.

Console—comfort, soothe, cheer.

Conspicuous—prominent, noted, distinguished, illustrious

Constancy—perseverance, firmness, steadiness, stability.

Constantly—ever, continually, perpetually, unchangeably, incessantly.

Construct—make, build, erect, form.

Consult—consider, deliberate, advise.

Consume—waste, destroy, absorb, complete.

Consummation—perfection, completion.

Contagious—epidemic, infectious.

Contain—hold, include, embrace, comprehend.

Contaminate—pollute, taint, defile, corrupt, poison.

Contemn—scorn, despise, disdain.

Contemplate—consider, meditate, muse.

Contemptible—paltry, vile, disdainful, mean, despicable, disreputable, low.

Contend—quarrel, debate, contest, argue, vie, strive.

Contention—strife, conflict, contest, combat, dispute, dissension.

Contentment—acquiescence, happiness, satisfaction, gratification.

Contiguous—near, approximating, adjacent.

Continual—perpetual, constant, incessant, unceasing, continuous.

Continuation—continuance, duration.

Contract—arrangement, bargain, agreement, compact, covenant.

Contract—curtail, abridge, condense, abbreviate, reduce, shorten.

Contradict—gainsay, deny, oppose.

Contrary—opposite, adverse, inimical.

Contribute—assist, administer, aid, share.

Contrition—remorse, penitence, repentance, compunction, regret.

Contrivance—device, means, invention, plan, scheme.

Control—subdue, restrain, check, govern, curb.

Controversy—argument, debate, disputation, contest.

Convene—call together, assemble, convoke.

Convenient—handy, adapted, suitable.

Conversation—dialogue, discussion, conference, colloquy.

Converse—commune, speak, talk, discourse.

Convey—take, carry, bear, transport.

Conviction—persuasion, detection, satisfaction.

Convivial—agreeable, festal, social, sociable.

Convoke—gather, assemble, convene, call together.

Copious—ample, full, abundant, exuberant, plenteous, bountiful.

Cordial—hearty, warm, sincere.

Correct—mend, amend, reform, better, improve, rectify,

Corroborate—establish, confirm, strengthen.

Corruption—depravity, pollution, defilement, adulteration, contamination, infection, putridity.

Costly—expensive, precious, valuable.

Counsel—advice, instruction, exhortation.

Counteract—change, defeat, oppose, hinder, frustrate, prevent.

Countenance—uphold, favor, encourage, support, sanction.

Counterfeit—forged, feigned, false, spurious, imposture, imitation.

Couple—brace, pair, two, join, connect.

Courage—heroism, valor, bravery, firmness, intrepidity, fearlessness.

Course—mode, way, track, line, career, progress, method, passage, road, route, series, succession.

Courteous—kind, civil, affable, polished, respectful, polite, well-bred.

Covenant—arrangement, agreement, contract, pledge, stipulation.

Covering—concealing, screening, sheltering, hiding, overspreading.

Covetousness—greed, avarice, cupidity, inordinate desire.

Coward—sneak, dastard, poltroon.

Cowardice—fear, timidity, cowardliness.

Crafty—underhanded, cunning, artful, wily, deceitful, sly, subtle.

Crave—beg, pray, beseech, entreat, implore, request, solicit, supplicate.

Create—build, form, make, cause, invent, originate, shape, produce.

Crime—evil, guilt, wickedness, sin, vice.

Crisis—juncture, critical point.

Criticism—stricture, censure, review, remark, judgment.

Crooked—bowed, turned, curved, awry, bent, disfigured, deformed.

Cross—ill-tempered, fretful, peevish, spleeny, petulant, splenetic.

Cruel—barbarous, brutal, pitiless, inhuman, inexorable, unmerciful, harsh.

Cultivation—advancement, civilization, improvement, refinement, tillage.

Cure—heal, restore, remedy.

Curious—prying, inquisitive.

Curse—imprecation, malediction, anathema, execration.

Cursory—hasty, careless, slight, desultory, superficial.

Curtail—shorten, contract, abbreviate, abridge.

Custom—habit, manner, usage, prescription, practice.

D

Damage—injury, hurt, loss, detriment.

Dampness—wet, moisture, humidity.

Danger—hazard, peril, risk, venture.

Daring—bold, fearless, valorous, courageous, intrepid, brave.

Dark—dismal, obscure, gloomy, dim.

Date—time, period, epoch, era, age.

Dead—still, lifeless, inanimate, deceased.

Deadly—fatal, mortal, destructive.

Dealing—trade, practice, traffic, commerce.

Dearth—famine, need, scarcity, want.

Debar—deter, hinder, prevent, exclude, preclude.

Debase—lower, degrade, humble, disgrace.

Debate—argue, wrangle, dispute, controvert, contest.

Debilitate—impair, weaken, enervate, enfeeble.

Debility—infirmity, weakness, incapacity, imbecility, feebleness.

Decay—decline, consumption.

Decease—demise, death, departure of life.

Deceit—fraud, duplicity, deception, cunning, artifice, trickery, guilt.

Decent—comely, fit, seemly, becoming.

Decide—settle, resolve, fix, determine.

Decision—sentence, determination, judgment, resolution, conclusion.

Decisive—conclusive, convincing, ending.

Declare—announce, pronounce, testify, proclaim, assure, assert, affirm.

Decline—droop, decay, shun, reject, repel, sink, refuse.

Decorate—embellish, ornament, beautify, adorn.

Decoy—allure, tempt, seduce, entice, inveigle.

Decrease—lessen, diminish, subside, lower, abate.

Dedicate—devote, consecrate, set apart.

Deduction—abatement, inference, conclusion.

Deed—action, exploit, achievement, feat.

Deface—mar, disfigure, destroy, mutilate.

Defame—slander, vilify, scandalize, calumniate.

Defeat—beat, baffle, conquer, overcome, overthrow, vanquish, frustrate.

Defect—want, flaw, blemish, imperfection.

Defective—wanting, imperfect, deficient.

Defender—protector, advocate, pleader, vindicator.

Defense—apology, excuse, justification, protection, vindication.

Defer—delay, hinder, prolong, retard, postpone, protract, procrastinate.

Deference—respect, regard, condescension, submission, veneration.

Deficient—lacking, wanting, imperfect.

Defile—taint, poison, vitiate, corrupt, contaminate, pollute.

Definite—exact, precise, positive, certain, bounded, limited.

Defraud—swindle, cheat, rob, deceive, trick.

Degrade—lower, disgrace, lessen, reduce, decry, depreciate, disparage.

Degree—rank, position, station, class, order.

Dejection—depression, lowliness, melancholy.

Delay—hinder, defer, detain, prolong, protract, postpone.

Deliberate—slow, hesitating, considerate, thoughtful, cautious.

Delicate—frail, fine, nice, weak, tender, beautiful, elegant, dainty.

Delighted—pleased, glad, grateful, joyful.

Delineate—describe, draw, paint, sketch, depict, represent.

Delinquent—criminal, offender.

Deliver—give up, save, yield, utter, surrender, concede, rescue, transmit.

Delude—mislead, deceive, cheat, beguile.

Delusion—cheat, illusion, deception, fallacy.

Demand—claim, require, ask.

Demolish—overthrow, destroy.

Demonstrate—illustrate, show, prove, manifest.

Denominate—name, title, style, designate.

Denote—imply, signify, mark, betoken.

Deny—refuse, disown, contradict, oppose.

Departure—leaving, forsaking, going away, abandoning, exit.

Dependence—trust, reliance, confidence, connection.

Deplore—bemoan, bewail, mourn, lament.

Deportment—behavior, conduct, character, carriage, demeanor.

Depraved—degraded, corrupt, abandoned, profligate, wicked, vicious.

Deprecate—underrate, disparage, detract, undervalue, degrade, traduce, lower.

Deprive—prevent, hinder, depose, divest, strip, abridge.

Depute—authorize, appoint, constitute.

Deputy—agent, substitute, representative, delegate.

Derange—disarrange, discompose, disorder, confuse, disconcert.

Deride—mock, ridicule, make fun of, banter, laugh at.

Describe—illustrate, narrate, delineate, recount, relate, represent.

Description—account, illustration, narration, explanation, recital, relation, detail.

Design—intend, plan, scheme, purpose, project, sketch.

Designate—name, show, point out, indicate, choose, distinguish, style.

Desist—stop, leave off, cease, discontinue.

Desperate—desponding, hopeless, mad, careless, furious, regardless.

Despicable—mean, vile, pitiful, worthless, outrageous, contemptible.

Despise—hate, scorn, loathe.

Despotic—arbitrary, self-willed, absolute.

Destination—point, location, lot, design, fate, purpose, appointment.

Destitute—bare, forlorn, poor, scanty, forsaken, needy.

Destroy—ruin, waste, demolish, consume, annihilate, dismantle.

Desultory—hasty, slight, loose, roving.

Detach—sever, separate, disjoin, divide.

Detail—account, tale, description, narration, recital.

Detain—keep, restrain, confine, hold.

Detect—find, discover, convict.

Determine—fix, decide, bound, limit, settle, resolve, adjust.

Determined—firm, resolute, decided, fixed, concluded, ended, immovable.

Detest—hate, loathe, abominate, abhor.

Detestable—hateful, loathsome, abominable, execrable.

Detract—defame, degrade, vilify, slander, calumniate, scandalize derogate.

Detriment—inconvenience, loss, injury, disadvantage, damage, hurt, prejudice.

Develop—grow, unravel, clear, unfold, disclose, exhibit.

Deviate—stray, wander, err, digress, swerve.

Device—design, scheme, show, plan, contrivance, stratagem, invention.

Devote—give, apply, consecrate, set apart, dedicate.

Devout—pious, holy, religious, prayerful.

Dexterity—adroitness, ability, expertness, aptness, skillfulness, skill, tact.

Dialect—language, speech, tongue.

Dictate—propose, direct, order, prescribe, instruct, suggest.

Die—expire, depart, perish, languish, wither.

Differ—dispute, dissent, contend, vary, disagree.

Different—unlike, various, diverse.

Difficult—trying, arduous, hard, troublesome.

Difficulty—obstacle, obstruction, embarrassment, trouble, perplexity, trial, impediment.

Diffident—retiring, fearful, bashful, distrustful, modest, hesitating.

Dignified—exalted, elevated, honored, stately.

Diligent—industrious, assiduous, laborious, active, persevering, attentive.

Diminish—shorten, curtail, abate, decrease, lessen, subside.
Direct — show, guide, conduct, manage, regulate, sway.
Direction — command, order, address, superscription.
Directly — at once, quickly, immediately, instantly, promptly, instantaneously.
Disagree—dispute, dissent, differ, quarrel, vary.
Disappoint—foil, defeat.
Disaster — misfortune, calamity, mischance, mishap.
Disavow—disown, deny, disclaim, repudiate.
Discard — cast off, dismiss, discharge.
Discern — distinguish, discriminate, penetrate, behold, discover.
Discernible—plain, evident, perceptible, manifest, apparent.
Disclose — reveal, discover, divulge.
Disconcert — disorder, confuse, defeat, ruffle, fret, vex, unsettle, interrupt, derange.
Discord — contention, dissension, inharmony.
Discover — make known, detect, communicate, reveal, impart, tell, disclose.
Discredit—dishonor, scandal, disgrace, disrepute, ignominy, reproach.
Discretion—prudence, judgment.
Disdain—scorn, contempt, pride, arrogance, haughtiness.
Disease—sickness, distemper, malady, disorder.
Disgrace — degrade, debase, dishonor, abase.
Disguise — cover, disfigure, conceal, dissemble.
Disgust—loathing, nausea, dislike, aversion.
Dishonor—shame, disgrace.
Dislike—antipathy, aversion, repugnance, hatred, contempt, abhorrence.
Dismiss — discharge, divest, discard.
Disorder — confusion, bustle, disease, tumult, malady, distemper, irregularity.
Disparage — lower, undervalue, degrade, detract, decry, depreciate.
Disperse—scatter, dissipate, deal out, spread, distribute.
Display — parade, exhibit, show, ostentation.
Displease—offend, anger, vex.
Dispose—regulate, place, arrange, order, adapt.
Dispute—contest, debate, quarrel, altercation, difference, controversy.
Disseminate—spread, circulate, scatter, propagate.
Dissertation — discourse, essay, treatise, disquisition.
Dissipate — disperse, squander, waste, expend, consume, dispel.
Distaste—aversion, disgust, contempt, dislike, dissatisfaction, loathing.
Distinct—clear, obvious, different, separate, unlike, dissimilar.
Distinguish—discriminate, know, see, perceive, discern.
Distinguished—noted, eminent, conspicuous, celebrated, illustrious.
Distress—grief, sorrow, sadness, suffering, affliction, agony, pain, anguish, misery.
Distribute—deal out, scatter, assign, allot, apportion, divide.
District—locality, section, tract, region, territory, province, circuit, county.
Diversion—enjoyment, pastime, recreation, amusement, deviation, sport.
Divide—separate, part, share, distribute.
Divine—suppose, conjecture, foretell, guess.
Divulge—disclose, impart, reveal, communicate, publish.
Docile—gentle, tractable, pliant, teachable, yielding, quiet.
Doctrine—belief, wisdom, dogma, principle, precept.
Dogmatical—positive, authoritative, arrogant, magisterial, confident.
Doleful—awful, dismal, sorrowful, woeful, piteous, rueful.
Doubt—suspense, hesitation, perplexity, scruple, uncertainty.
Doubtful — unstable uncertain, dubious, precarious, equivocal.
Drag—pull, bring, haul, draw.
Dread—fear, apprehension.
Dreadful—fearful, frightful, terrible, awful, horrible.
Dress—array, apparel, vestments, garments, attire.
Droop—pine, sink, fade, decline, languish.
Dumb—mute, still, silent, inarticulate.
Durable — lasting, constant, permanent, continuing.
Dutiful — submissive, obedient, respectful.
Dwelling — home, house, abode, habitation, residence, domicile.

E

Eager — earnest, excited, ardent, impetuous, quick, vehement.
Earn—acquire, win, make, gain, obtain.
Earth—globe, world, planet.
Ease—rest, quiet, repose, facility, lightness.
Economical—careful, close, saving, frugal, thrifty, sparing.
Ecstasy—happiness, joy, rapture, transport, delight, enthusiasm, elevation.
Edifice — building, fabric, structure.
Education — culture, cultivation, breeding, refinement, instruction, nurture, tuition.
Efface—destroy, obliterate, erase, expunge, eradicate.
Effect — consequence, result, purpose, event, issue, reality, meaning.
Effects — things, goods, chattels, furniture, movables, property.
Efficient — competent, capable, able, effectual, effective.
Effort—endeavor, essay, attempt, exertion, trial.
Elegant—graceful, lovely, beautiful, handsome.
Eligible — suitable, fit, worthy, capable.
Embarrass — trouble, entangle, puzzle, perplex, distress.
Embellish — ornament, decorate, adorn, illustrate, deck, beautify.
Emblem—symbol, figure, type.
Embrace—hold, clasp, hug, comprehend, comprise.
Emergency—necessity, exigency, casualty.
Emolument—reward, profit, gain, advantage, lucre.
Emotion—feeling, tremor, excitement, agitation.
Employment—occupation, trade, profession, business, avocation.
Empower—enable, delegate, commission, authorize.
Empty—untenanted, vacant, void, evacuated, unfurnished, unfilled.
Enchant—beguile, charm, captivate, bewitch, fascinate, enrapture.
Encomium—eulogy, praise.
Encounter—quarrel, assault, attack, combat, engagement, meeting.
Encourage — cheer, stimulate, animate, incite, sanction, support, countenance, instigate.
Encroach—intrude, trespass, infringe.
End—finish, close, stop, extremity, termination, sequel, consequence, cessation, death, purpose.
Endeavor—aim, exertion, effort, attempt.
Endless — unending, everlasting, perpetual, interminable, infinite, incessant, eternal.
Endurance — submission, fortitude, patience, resignation.
Enemy—adversary, opponent, foe, antagonist.
Energy — determination, efficacy, force, vigor, strength, potency, power.
Enervate—weaken, enfeeble, unnerve, debilitate, deteriorate.
Engage — employ, enlist, fight, induce, pledge, promise, attract, win.
Enjoyment—happiness, pleasure, joy, gratification.
Enlarge — extend, widen, lengthen, increase.
Enmity—spite, hatred, hostility, malignity, animosity.
Enough—ample, sufficient, plenty, abundance.
Enrage—excite, irritate, inflame, incense, aggravate, exasperate.
Enrapture—charm, attract, captivate, fascinate, enchant.
Enterprise—business, adventure, attempt, undertaking.
Entertainment—pastime, sport, amusement, recreation, diversion, performance, banquet, feast.
Entice—tempt, decoy, seduce, attract, allure.
Entire—full, whole, perfect, complete, total, integral.
Entirely — perfectly, completely, wholly.
Entitle — style, designate, name, characterize, denominate.
Entreat—ask, solicit, crave, beg, beseech, implore, petition, supplicate.
Envy—suspicion, jealousy, grudging.
Epitomize—lessen, abridge, curtail, reduce, condense.
Equal—commensurate, adequate, uniform.
Equitable — just, right, honest, satisfactory, impartial, reasonable, fair.
Eradicate—exterminate, root out, extirpate.
Erase — expunge, efface, cancel, obliterate.
Erect—build, raise, found, set up, construct, elevate, establish, institute.
Error—blunder, mistake, fault.
Escape—elope, evade, elude, fly, avoid, pass.
Essential—important, necessary, requisite, indispensable.
Esteem — respect, regard, value, appreciate, prize, love.
Estimate—rate, compute, value, calculate, appraise, appreciate, esteem.
Eternal—perpetual, forever, endless, infinite, immortal, continual, everlasting.
Evade—escape, elude, avoid, prevaricate, shun.
Even—smooth, level, plain, equal, uniform.
Event—incident, adventure, issue, occurrence, result, consequence.
Ever—always, constantly, forever, unceasingly, continually, incessantly.
Evidence—proof, deposition, witness, testimony.
Evil—sinful, wicked, bad.
Exact — enjoin, demand, extract, extort.
Exact—sure, strict, punctual, precise, accurate.
Exalted—high, elevated, refined, dignified, raised, sublime, magnificent.
Examination—search, scrutiny, investigation, inquiry, research.
Example — copy, precedent, pattern.
Exasperate—excite, irritate, enrage, vex, provoke, aggravate.
Exceed — improve, outdo, excel, surpass, transcend.
Excellence — goodness, purity, superiority, perfection, eminence.
Except—but, besides, unless, object.
Exchange—barter, trade, traffic.
Excite—provoke, arouse, incite, stimulate, awaken, irritate.
Exculpate — forgive, exonerate, acquit, absolve, justify.
Excuse—pretense, pretext, plea, subterfuge, apology, evasion.
Execrable — hateful, detestable, contemptible, abominable.
Exemption — freedom, privilege, immunity.
Exercise—practice, exert, carry on.
Exhaust—empty, drain, spend.
Exigency—necessity, emergency.
Exonerate—clear, relieve, exculpate, justify, acquit, absolve, forgive.
Expectation—belief, trust, hope, confidence, anticipation.
Expedient — fit, suitable, necessary, requisite.
Expedite — hurry, hasten, accelerate, quicken.
Expeditious — speedy, diligent, quick, prompt.
Expel—exile, banish, cast out.
Expensive — dear, costly, valuable.
Experience — knowledge, trial, experiment, proof, test.
Expert — handy, ready, skillful, adroit, dexterous.
Explain—show, elucidate, unfold.
Explanation — detail, account, description, relation, explication, recital.
Explicit—clear, definite, express, plain.
Exploit — feat, accomplishment, achievement, deed, performance.
Explore—search, examine.
Extend—spread out, stretch out, enlarge, increase, distend, diffuse.
Extensive—wide, comprehensive, large.
Extenuate — palliate, diminish, lessen, excuse.
Exterior — outward, outside, external.
Exterminate — eradicate, extirpate, destroy.
External—outward, exterior.
Extol—commend, praise, admire, laud, eulogize, applaud.

F

Facetious — amusing, jocular, comic, jocose.
Fact—incident, circumstance.
Faculty — ability, gift, talent, power.
Failing—weakness, imperfection, frailty, misfortune, miscarriage, foible, fault.
Fair—clear, consistent, right impartial, straight, honest, just, equitable.
Faith—trust, belief, credit, fidelity.

Fallacious—illusive, visionary, deceitful, delusive, fraudulent.

Falsehood—falsity, falsification, fabrication, fiction, lie, untruth.

Familiar—free, intimate, unceremonious.

Famous—celebrated, eminent, renowned, distinguished, illustrious.

Fanciful—ideal, imaginative, capricious, fantastical, whimsical, hypochondriac.

Fancy—imagination, taste, whim, caprice, inclination, liking, conceit, notion, conception, humor, ideality.

Fascinate—charm, attract, captivate, bewitch, enchant, enrapture.

Fashion—style, mode, custom, manner, way, practice, form, sort.

Fasten—fix, hold, stick, annex, attach, affix.

Fastidious—particular, disdainful, squeamish.

Fate—destiny, chance, fortune, luck, doom, lot.

Favor—civility, support, benefit, grace.

Favorable—auspicious, suitable, propitious.

Fault—failing, error, shortcoming, blemish, imperfection, offense.

Faultless—guiltless, blameless, spotless, innocent.

Fear—alarm, dread, timidity, terror, fright, trepidation, apprehension.

Fearful—dreadful, horrible, terrible, awful, afraid, timorous, timid.

Fearless—daring, brave, intrepid, undaunted, courageous.

Feasible—reasonable, plausible, practicable.

Feat—exploit, trick, achievement, act, deed.

Feeble—frail, infirm, weak.

Feeling—sensation, sympathy, generosity, sensibility.

Felicity—joy, delight, happiness, prosperity, bliss, blessedness.

Fertile—fruitful, prolific, abundant, productive.

Fervor—warmth, heat, ardor, vehemence, zeal.

Festivity—joyfulness, happiness, gayety, festival.

Fickle—unstable, changeable, inconstant, variable, capricious, impulsive.

Fiction—invention, lie, untruth, falsehood, fabrication.

Fidelity—faith, honesty, loyalty.

Fiery—hot, fervent, impulsive, ardent, passionate, vehement.

Figure—shape, semblance, form, representation, statue.

Fine—delicate, nice, pretty, lovely, showy, beautiful, elegant.

Finish—conclude, end, terminate, close, complete, perfect.

Firm—ready, strong, immovable, solid, steady, sturdy, partnership, resolute.

First—highest, chief, earliest, primary, primitive, pristine, commencement, original.

Fitted—suited, competent, qualified, adapted.

Flag—droop, languish, decline, pine, faint.

Flagitious—wicked, atrocious, flagrant, heinous.

Flavor—taste, odor, fragrance.

Flaw—spot, stain, speck, crack, blemish, defect.

Fleeting—transient, transitory, swift, temporary.

Fleetness—swiftness, rapidity, quickness, velocity, celerity.

Fluctuate—vary, waver, change, hesitate, vacillate.

Follower—adherent, successor, believer, disciple, partisan, pursuer.

Fondness—affection, love, attachment, tenderness.

Foolish—simple, stupid, silly, absurd, preposterous, irrational.

Forbear—refrain, spare, abstain, pause.

Forbid—deny, prohibit, interdict, oppose.

Force—oblige, compel, restrain.

Forcible—powerful, strong, irresistible, mighty, potent, cogent.

Forebode—foretell, presage, betoken, prognosticate, augur.

Forego—quit, give up, resign.

Foregoing—before, former, previous, prior, preceding, anterior, antecedent.

Forethought—expectation, foresight, anticipation, premeditation.

Forfeiture—penalty, fine.

Forge—counterfeit, frame, invent, fabricate.

Forgive—absolve, pardon, remit, acquit, excuse.

Forlorn—forsaken, lost, lonely, destitute, deserted.

Form—ceremony, observance, rite.

Formal—cermonious, particular, methodical, exact, stiff, precise.

Forsake—desert, abandon, leave, abdicate, relinquish, quit.

Fortunate—successful, lucky, prosperous.

Fortune—estate, portion, success, fate.

Forward—confident, eager, bold, ardent, immodest, presumptuous, ready, progressive.

Foster—keep, harbor, nourish, cherish, nurse.

Fragile—brittle, weak, tender, frail.

Frailty—weakness, unsteadiness, instability, failing, foible.

Frame—fabricate, compose, plan, contrive, invent, form, adjust.

Fraternity—society, brotherhood.

Fraud—cheat, imposition, deceit, deception, guile.

Freak—whim, caprice, humor, fancy.

Free—generous, liberal, candid, open, frank, familiar, unconfined, unconstrained, unreserved, munificent, bounteous.

Free—deliver, liberate, rescue, clear, affranchise, enfranchise.

Freedom—liberty, independence, exemption, privilege, familiarity, unrestraint.

Freely—spontaneously, frankly, unreservedly, cheerfully, unhesitatingly, liberally.

Frequently—often, repeatedly, commonly, generally, usually.

Fresh—new, recent, cool, modern, novel.

Fret—chafe, anger, gall, corrode, agitate, vex.

Fretful—captious, peevish, angry, petulant.

Friendly—pleasant, kind, agreeable, sociable, amicable.

Fright—panic, consternation, terror, alarm.

Frighten—terrify, scare, alarm, intimidate, affright, daunt.

Frightful—horrid, horrible, terrible, terrific, dreadful, fearful.

Frugal—careful, saving, prudent, economical.

Fruitful—abundant, plentiful, fertile, productive, prolific.

Frustrate—defeat, hinder, foil, nullify, disappoint.

Fully—largely, amply, completely, copiously, abundantly.

Futile—useless, frivolous, trifling.

G

Gain—obtain, get, win, acquire, attain, profit.

Gait—bearing, mien, walk, carriage.

Gale—breeze, storm, hurricane, tempest.

Gather—collect, muster, infer, assemble, compress, fold.

Gay—dashing, showy, merry, fine, cheerful.

Generally—usually, commonly, frequently.

Generous—liberal, bounteous, beneficent, munificent, noble.

Genius—talent, intellect, wisdom, ingenuity, capacity, ability, taste.

Genteel—polished, refined, mannerly, cultured, polite.

Gentle—tame, meek, mild, quiet, peaceable.

Genuine—real, actual, authentic, unalloyed, unadulterated, true, natural.

Germinate—sprout, shoot, grow, bud, vegetate.

Gesture—action, motion, posture, attitude.

Get—gain, attain, obtain, procure, realize, acquire, possess.

Gift—donation, present, gratuity, benefaction, endowment, ability, talent.

Give—impart, confer, grant, bestow, consign, yield.

Glad—happy, gay, cheerful, joyful, joyous, delighted, gratified.

Glance—sight, look, glimpse.

Glitter—glisten, sparkle, shine, glare, radiate.

Glittering—glistening, sparkling, shining, bright, brilliant.

Gloom—dark, sad, dim, cloudy, dull, sullen, morose, melancholy.

Glory—fame, renown, splendor, praise, honor, reputation, brightness.

Graceful—comely, genteel, becoming, elegant, neat.

Grand—dignified, lofty, exalted, great, elevated, magnificent, sublime, majestic, glorious, superb, splendid.

Grant—give, bestow, cede, confer, concede, sell, yield.

Grasp—grip, seize, catch.

Grateful—thankful, agreeable, delicious, pleasing.

Gratification—indulgence, happiness, enjoyment, fruition, pleasure.

Grave—slow, solemn, thoughtful, serious, important, sedate.

Greatness—size, bulk, grandeur, magnitude, immensity, dignity, power.

Greediness—ravenous, rapacity, voracity, covetousness, eagerness.

Grief—sadness, sorrow, distress, regret, melancholy, affliction, anguish.

Grieve—bemoan, bewail, afflict, lament, hurt, mourn, sorrow.

Group—cluster, collection, assemblage.

Grow—sprout, vegetate, proceed, increase.

Guarantee—warrant, vouch for, secure.

Guard—protect, defend, shield, watch.

Guess—suppose, conjecture, think, surmise, divine.

Guest—stranger, visitor, visitant.

Guide—lead, direct, conduct, control, instruct, regulate.

Guilty—depraved, wicked, sinful, criminal, debauched.

H

Hale—strong, sound, hearty, robust.

Handsome—fine, fair, beautiful, pretty, graceful, lovely, elegant, noble.

Happiness—contentment, luck, felicity, bliss.

Harass—tire, molest, weary, disturb, perplex, vex, torment.

Harbinger—messenger, forerunner, precursor.

Hard—near, close, unfeeling, inexorable, arduous, difficult, firm, hardy, solid.

Hardened—unfeeling, obdurate, insensible, callous.

Hardihood—boldness, presumption, audacity, effrontery, daring, bravery.

Hardly—barely, scarcely, with difficulty.

Hardship—affliction, oppression, grievance, injury.

Harm—evil, injury, damage, misfortune, hurt, ill, mishap.

Harmless—gentle, unoffending, inoffensive, innocent.

Harmony—unison, concord, accordance, melody, agreement.

Harsh—rough, stern, severe, rigorous, austere, morose.

Hasten—hurry, expedite, accelerate, quicken.

Hastiness—dispatch, speed, precipitancy, hurry, rashness.

Hasty—rash, angry, quick, passionate, cursory.

Hate—dislike, abjure, detest, abhor, loathe, abominate.

Hateful—odious, contemptible, execrable, detestable, abominable, loathsome.

Haughtiness—vanity, self-conceit, arrogance, pride, disdain.

Hazard—trial, venture, chance, risk, danger, peril.

Headstrong—self-willed, stubborn, forward, violent, obstinate, venturesome.

Heal—restore, cure, remedy.

Healthy—well, sound, wholesome, salutary, salubrious.

Hear—harken, listen, watch, attend, overhear.

Hearty—sincere, zealous, warm, strong, cordial, ardent, healthy.

Heaviness—sorrow, gloom, dejection, weight, gravity.

Heedless—dilatory, thoughtless, negligent, remiss, careless, inattentive.

Heighten—raise, advance, improve, aggravate.

Heinous—wicked, sinful, flagrant, atrocious.

Help—provide, serve, assist, aid, relieve, support, succor.

Hence—from, thence, so, accordingly, therefore, wherefore, consequently.

Heroic—bold, noble, brave, fearless, valiant, courageous, intrepid.

Heroism—valor, boldness, courage, bravery, gallantry, fortitude.

Hesitate—pause, falter, wait, delay, doubt, demur, stammer.

Hidden—obscure, mysterious, secret, covert, concealed.

Hideous—awful, frightful, horrible, ghastly, grim, grisly.

Hilarity—jollity, joviality, mirth, merriment, cheerfulness, gayety.

Hinder—interfere, impede, embarrass, retard, prevent, oppose, stop, thwart, obstruct.

Hold—keep, occupy, maintain, retain, detain, grasp, possess.

Honesty—honor, fidelity, frankness, integrity, probity, purity, justice, sincerity, rectitude, uprightness, truthfulness.

Honor—exalt, dignify, respect, adorn, revere, esteem, venerate, reverence.

Hope—desire, belief, trust, confidence, expectation, anticipation.

Hopeless—desponding, dejected, despairing.

Horrible—dreadful, terrible, terrific, fearful, frightful, awful.

Hostile—unfriendly, contrary, opposite, repugnant.

Hostility — enmity, opposition, animosity, illwill, unfriendliness.

House—domicile, dwelling, home, habitation, family, race, quorum.

However—notwithstanding, but, nevertheless, yet, still.

Humble—meek, lowly, subdued, submissive, modest, unpretending, unassuming.

Hurry—hasten, expedite, precipitate.

Hurtful — annoying, injurious, detrimental, mischievous, pernicious, prejudicial.

Hypocrisy — dissimulation, pretence, deceit.

I

Idea—notion, thought, conception, imagination, perception.

Idle—unoccupied, unemployed, inactive, indolent, still, lazy, slothful.

Ignorant — untaught, unskilled, uninformed, unlettered, illiterate, unlearned.

Illness — sickness, disorder, disease, malady.

Illusion—falsity, mockery, deception.

Imagine—think, suppose, fancy, conceive, deem, contrive, apprehend.

Imbecility — weakness, languor, feebleness, infirmity, debility, impotence.

Imitate—follow, copy, mimic.

Immaterial—unimportant, insignificant, inconsiderable, inconsequential, uncorporeal, spiritual, unsubstantial, unconditioned.

Immediately—instantly, directly

Immense—vast huge, enormous, prodigious, unlimited.

Immodest—impudent, bold, indelicate, shameless, indecent, unchaste.

Impair — lessen, weaken, injure, decrease.

Impart—grant, bestow, disclose, communicate, reveal, divulge.

Impatient — uneasy, eager, restless, hasty.

Impeach—censure, reproach, arraign, accuse.

Impede—hinder, delay, obstruct, retard.

Impediment — obstruction, obstacle, hinderance.

Impel—urge, force, incite, induce, instigate, animate, encourage.

Impending—imminent, threatening.

Imperative — commanding, imperious, authoritative, despotic.

Imperfection—wanting, blemish, fault, defect, failing, frailty, foible, weakness.

Imperious — commanding, domineering, haughty, imperative, proud, lordly, overbearing, tyrannical.

Impertinent—rude, quarrelsome, intrusive, insolent, meddling, irrelevant, troublesome.

Impetuous—hasty, rough, vehement, violent, forcible, boisterous.

Implicate — involve, embarrass, entangle.

Implore — beg, beseech, ask, entreat, supplicate, solicit, request.

Imply—mean, signify, denote, infer, involve.

Importance — weight, moment, signification, consequence.

Imposture—deceit, cheat, fraud, deception, imposition, counterfeit, artifice

Imprecation—execration, curse, malediction, anathema.

Improve — cultivate, correct, reform, rectify, amend, advance.

Impudent—insolent, bold, rude, saucy, impertinent, uncouth, immodest, shameless.

Impute—charge, ascribe, attribute.

Inability — disability, weakness, impotence.

Inactive — sluggish, lazy, idle, slothful, inert, drowsy.

Inadequate—insufficient, incompetent, unable, incapable.

Inattentive—negligent, heedless, careless, inadvertent, thoughtless, dilatory, remiss.

Incessantly—constantly, continually, unremitingly, unceasingly.

Incident — contingency, circumstance, event.

Incite—provoke, excite, stimulate, arouse, encourage, animate, aggravate.

Include—contain, enclose, comprise, embrace, comprehend.

Incommode—molest, disturb, inconvenience, trouble, annoy.

Incompetent—inapt, insufficient, incapable, inadequate, unsuitable.

Inconsistent—incongruous, contrary, ridiculous, absurd.

Inconstant—unstable, uncertain, fickle, variable, changeable, versatile.

Indecent—unbecoming, impudent, immodest, indelicate.

Indicate—show, mark, point out, reveal.

Indifferent—passive, neutral, regardless, unconcerned, impartial

Indigence—poverty, need, want, penury.

Indigenous—native.

Indignation—temper, anger, displeasure, contempt, resentment, wrath.

Indiscretion—imprudence, folly, injudiciousness.

Indispensable — important, necessary, essential.

Indisputable — undeniable, indubitable, unquestionable, incontrovertible, conclusive, settled.

Indistinct—confused, ambiguous, doubtful, dark.

Induce—persuade, lead, influence, urge, instigate, actuate.

Industrious — diligent, persevering, laborious, assiduous, active.

Inevitable—unavoidable, certain.

Inexorable — immovable, relentless, unyielding, implacable.

Inexpedient — unsuitable, unfit, inconvenient.

Infect—taint, corrupt, defile, contaminate, pollute.

Inference—deduction, conclusion.

Inferior—less, lower, secondary, subservient, subordinate.

Infested—disturbed, troubled, annoyed, plagued.

Infinite — boundless, unbounded, illimitable, unlimited, immense, eternal.

Infirm — weak, sickly, decrepit, feeble, debilitated, imbecile.

Influence—authority, power, persuasion, credit, favor, sway.

Information — notice, counsel, intelligence, advice, instruction.

Ingenious — inventive, talented, skillful.

Ingenuity — capacity, invention, genius, skill, talent.

Inhabit — dwell, occupy, reside stay, abide, sojourn.

Inherent—innate, inborn, inbred.

Inhuman—cruel, savage, barbarous, brutal.

Iniquitous—unjust, evil, wicked, nefarious

Injunction—order, mandate, precept, command.

Injure—harm, hurt, impair, damage, deteriorate.

Innate—natural, inherent, inbred, inborn.

Innocent—pure, blameless, guiltless, faultless, inoffensive, harmless, spotless.

Inordinate — immoderate, intemperate, irregular, excessive.

Inquisitive — curious, inquiring, anxious, prying.

Insanity—derangement, madness, craziness, lunacy, mania.

Insensibility — dullness, apathy, indifference, stupidity, torpor, imperceptibility.

Insidious—deceitful, sly, crafty, cunning, subtle, treacherous.

Insignificant — worthless, meaningless, inconsiderable, trivial, unimportant.

Insinuate — hint, suggest, intimate.

Insolent—insulting, abusive, rude, haughty, saucy, offensive, impertinent.

Inspire—animate, invigorate, enliven, cheer, exhilarate, suggest.

Instigate — tempt, incite, urge, encourage, impel, move, stimulate.

Instill—infuse, implant, sow.

Instruction—education, precept, teaching, suggestion, counsel, advice.

Insufficient — inadequate, incapable, incompetent, unfit, unable, unsuitable.

Insult — abuse, affront, outrage, contempt, insolence, indignity.

Integrity—purity, probity, truthfulness, uprightness, honesty.

Intellect—understanding, genius, ability, capacity, talent.

Intelligence—intimation, understanding, information, notice, knowledge, intellect.

Intemperate—excessive, immoderate, inordinate.

Intend—purpose, mean, design.

Intercede — mediate, interpose, interfere

Interline—insert, alter, correct, add.

Intermission — cessation, stop, rest, vacation, interruption.

Intermit — abate, suspend, subside, forbear.

Interpose — mediate, interfere, intermeddle.

Interpret—explain, demonstrate, elucidate, expound, decipher.

Interrogate—examine, question, inquire.

Interval—space, interstice, time.

Intervening — coming between, interposing, intermediate.

Intimidate — frighten, alarm, daunt, scare.

Intoxication — infatuation, inebriety, drunkenness.

Intractable—perverse, obstinate, stubborn, ungovernable, uncontrollable, unmanageable.

Intrepid — fearless, undaunted, bold, daring, valiant, courageous, brave.

Intrinsic—real, true, inherent, inward, essential, genuine.

Introductory—preliminary, previous, prefatory.

Intrude — invade, infringe, encroach, obtrude, entrench.

Intrust—confide, commit.

Invade — enter, attack, intrude, encroach, infringe.

Invalid—weak, sick, infirm, null, feeble, void.

Invalidate—weaken injure destroy, overthrow

Invective — censure, abuse, railing, reproach, satire.

Invent — feign, fabricate, frame, conceive, discover, devise.

Invest—enclose, surround, confer, adorn, array, endow, endue.

Investigation—search, inquiry, examination, scrutiny, research

Inveterate—obstinate, confirmed, constant, fixed.

Invigorate—restore, strengthen, fortify.

Invincible — unyielding, unconquerable.

Involve — envelop, enwrap, entangle, implicate.

Irascible—irritable, hasty, fiery, hot, angry.

Ire — anger, temper, wrath, passion, resentment.

Irony—ridicule, sarcasm, satire, burlesque.

Irrational — unreasonable, foolish, absurd, silly.

Irrefragable—undeniable, indisputable, incontrovertible, unquestionable.

Irritate — plague, anger, tease, excite, provoke, aggravate, exasperate.

Irruption—opening, invasion, inroad, bursting forth.

Issue—offspring, progeny, result, end, sequel, egress, evacuation, effect, consequence

J

Jade — harass, weary, tire dispirit.

Jealousy—suspicion, envy

Jest—fun, joke, sport.

Jocose—funny, witty, merry, jocular, pleasant, facetious, waggish.

Jocund — joyful, lively, merry, gay, sprightly, sportive, lighthearted, vivacious, mirthful.

Join—unite, add, combine, close, adhere, confederate league.

Joke—rally, sport.

Jollity—hilarity, mirth, gayety, merriment, festivity, joviality.

Journey — travel, trip, voyage, tour.

Joy—happiness, delight, gladness, charm, rapture, ecstasy, felicity, exultation, pleasure, transport.

Judgment — sentence, decision, doom, opinion, discernment, discrimination, penetration, intelligence, sagacity.

Just — exact, accurate, correct, honest, barely, upright, righteous, equitable, incorrupt.

Justify — defend, excuse, clear, absolve, maintain.

Justness—exactness, correctness, accuracy, equity, propriety

K

Keen—sharp, penetrating, acute, cutting, piercing, shrewd.

Keep—hold, detain, support, retain, maintain, guard, reserve, sustain.

Kind—indulgent, compassionate, tender, lenient, gentle, affable, courteous, benignant, bland.

Kind—sort, manner, class, race, species, way, genus.

Knowledge—understanding, perception, learning, erudition, skill, acquaintance.

L

Labor—toil, work, strive, exert, drudge.

Lament—sorrow, mourn, deplore, complain, bewail, grieve, regret.

Language—tongue, speech, dialect, idiom.

Languid—weary, weak, faint, exhausted, dull, drooping.

Large—comprehensive, capacious, extensive, big, great, huge.

Lassitude—prostration, languor, weariness, enervation, fatigue.

Last—latest, hindmost, ultimate, final, end.

Lasting—durable, continuous, forever, continual, permanent, perpetual, eternal.

Latent—unseen, hidden, secret.

Laudable—praiseworthy, commendable.

Laughable—droll, ridiculous, comical, mirthful.

Lavish—profuse, wasteful, extravagant.

Lazy—indolent, idle, slothful, inactive.

Lean—bend, incline, totter, waver.

Learning—intelligence, knowledge, erudition, science, literature, information.

Leave—abandon, desert, resign, relinquish, bequeath.

Legitimate—real, legal, lawful, genuine.

Lengthen—protract, extend, continue, draw out.

Lessen—diminish, decrease, abate, reduce, subside, shrink, degrade.

Let—allow, permit, suffer, leave, hire.

Lethargic—dull, tired, weary, heavy, drowsy, sleepy.

Level—even, smooth, plain, flat.

Levity—giddiness, gayety, fickleness, vanity, lightness.

Liable—exposed, responsible, subject.

Liberal—benevolent, generous, munificent, charitable.

Liberate—free, set free, deliver, release.

Liberty—freedom, permission, license, leave, exemption, privilege.

Lie—deception, untruth, fiction, fabrication, falsehood.

Life—being, energy, vitality, vivacity, briskness.

Lifeless—deceased, dead, inanimate, inactive, stale, flat, dull.

Lift—raise, elevate, exalt, hoist.

Light—illuminate, enlighten, nimble, kindle.

Like—probable, similar, uniform, resembling.

Likeness—resemblance, picture, portrait.

Liking—inclination, attachment, fondness, affection.

Linger—wait, delay, loiter, hesitate, saunter, tarry, lag.

Liquid—fluid, liquor.

Listen—hearken, attend, hear, overhear.

Little—small, diminutive.

Live—exist, subsist, dwell, abide, reside.

Lively—active, energetic, brisk, nimble, jocund, merry, sprightly, vigorous.

Lodge—accommodate, entertain, shelter, harbor.

Loftiness—height, haughtiness, stateliness, elevation, dignity, pride.

Loiter—lag, saunter, linger.

Lonely—dreary, lonesome, retired, solitary.

Look—see, behold, view, inspect, appearance.

Loose—unconnected, open, unrestrained, dissolute, licentious, unjointed.

Loss—injury, damage, detriment, waste.

Lot—share, portion, fate, fortune, destiny.

Loud—noisy, vociferous, clamorous, turbulent, vehement.

Love—liking, affection, fondness, kindness, attachment, adoration, esteem.

Lovely—attractive, amiable, elegant, charming, handsome, fine, delightful, beautiful.

Lover—beau, wooer, suitor.

Loving—kind, affectionate, attentive, tender, amorous.

Low—humble, mean, base, abject, debased, dejected, despicable.

Lower—humble, humiliate, debase, degrade.

Lucky—successful, fortunate, prosperous.

Ludicrous—amusing, comical, droll, laughable.

Lunacy—mania, derangement, insanity, madness.

Luxuriant—excessive, voluptuous, abundant, exuberant.

Luxury—profusion, abundance, excess.

M

Magnificent—noble, grand, sublime, glorious, splendid, superb.

Magnitude—size, greatness, bulk.

Maintain—sustain, keep, support, help, continue, assert, defend, vindicate.

Malady—evil, disease, affliction, disorder, distemper.

Manage—control, direct, conduct.

Mandate—command, charge, injunction, order.

Mangle—cut, lacerate, mutilate, tear, maim.

Manifest—evident, clear, open, apparent, obvious, plain.

Margin—edge, verge, rim, brim, brink, border.

Mark—stamp, impress, imprint, brand, show, observe.

Marriage—matrimony, wedlock, nuptials.

Marvel—wonder, prodigy, miracle.

Massive—large, heavy, bulky, ponderous.

Master—achieve, overcome, surmount, conquer.

Mature—perfect, complete, ripe.

Maxim—saying, adage, proverb.

Mean—abject, low, despicable, miserly, sordid, penurious, niggardly.

Meaning—sense, import, signification, intention, purpose, design.

Meanwhile—meantime, interim, intervening.

Mechanic—artisan, artificer.

Meddle—interpose, interfere, interrupt.

Mediate—intercede, interpose.

Meek—mild, soft, gentle, humble.

Meet—assemble, join, fit, becoming.

Meeting—assembly, company, auditory, congregation.

Melancholy—sadness, distress, depression, gloom, grief, dejection.

Melody—harmony, unison, happiness, concord.

Melt—dissolve, soften, liquefy.

Memory—remembrance, reminiscence, recollection.

Mend—improve, repair, rectify, correct.

Merciful—mild, tender, gracious, benignant, compassionate, forgiving.

Merciless—hard hearted, pitiless, cruel, unmerciful.

Mercy—pity, clemency, compassion, lenity.

Merry—happy, joyous, cheerful, gay, lively, mirthful, sportive, sprightly, vivacious.

Messenger—bearer, carrier, harbinger, forerunner, precursor.

Metaphor—similitude, trope, emblem, allegory, symbol.

Method—order, manner, system, mode, rule, plan, regularity.

Mighty—strong, powerful, great, potent.

Mild—meek, gentle, kind, easy, sweet, tender, mellow.

Mindful—heedful, observant, attentive.

Minister—contribute, supply, administer.

Mirth—merriment, joy, hilarity, cheerfulness, vivacity, jollity.

Mischief—damage, harm, hurt, misfortune, injury.

Miserly—stingy, covetous, niggardly, penurious, avaricious.

Misfortune—calamity, harm, disaster, mishap, ill-luck.

Mistake—error, blunder, misconception.

Misuse—ill-treat, pervert, abuse, misapply.

Mitigate—lessen, alleviate, appease, ameliorate, abate, assuage, soothe, mollify.

Model—pattern, copy, sample, mould, specimen.

Moderation—temperance, sobriety, frugality, forbearance, modesty.

Modern—recent, late, new, novel.

Modest—quiet, retiring, reserved, diffident, bashful, unassuming.

Modify—re-arrange, change, extenuate, alter, moderate.

Molest—annoy, vex, tease, incommode, trouble, disturb.

Mollify—ease, appease, moderate, mitigate, assuage, soften.

Morose—sour, sullen, gloomy, peevish, forbidding.

Motive—incentive, reason, cause, principle.

Mourn—grieve, lament, sorrow, bewail, bemoan.

Move—change, pass, stir, incite, influence, persuade, actuate, instigate, impel.

Munificent—bounteous, bountiful, generous, beneficent, liberal, plentiful.

Muse—study, ponder, wonder, reflect, think, meditate, contemplate.

Mutable—changeable, unsteady, inconstant, fickle, wavering, unstable, variable, alterable, irresolute.

Mutilate—deface, injure, destroy, deprive, mangle, maim.

Mutinous—turbulent, seditious, insubordinate.

Mysterious—hidden, dim, dark obscure, mystic, latent.

N

Naked—exposed, nude, unclothed, uncovered, simple, plain.

Name—cognomen, appellation, title, reputation, credit, denomination.

Narrow—contracted, confined, limited, curtailed, close.

Native—indigenous, genuine, intrinsic.

Near—adjoining, adjacent, close, contiguous.

Necessary—needful, expedient, indispensable, essential, important, requisite.

Need—poverty, want, penury, indigence.

Nefarious—evil, wicked, unjust, wrong, iniquitous.

Negligent—careless, heedless, remiss, neglectful, inattentive.

New—fresh, late, modern, novel.

Nigh—close, adjoining, contiguous, near, adjacent.

Noble—distinguished, elevated, exalted, illustrious, great, grand.

Noisy—boisterous, turbulent, high, clamorous, loud sounding.

Noted—renowned, distinguished, conspicuous, celebrated, eminent, notorious, illustrious.

Notice—warning, information, intelligence, advice.

Notion—thought, opinion, sentiment, whim, idea, conception, perception.

Notorious—celebrated, renowned, distinguished, noted, public, conspicuous.

Notwithstanding—nevertheless, however, in spite of, yet.

Nourish—feed, uphold, maintain, cherish, nurture, support.

O

Obdurate—inflexible, unfeeling, callous, impenitent, hardened, insensible, obstinate.

Obedient—submissive, compliant, yielding, dutiful, obsequious, respectful.

Object—end, subject, aim.

Object—oppose, against, except to.

Oblige—compel, coerce, bind, engage, force, favor, please, gratify.

Obnoxious—offensive, liable, disagreeable, unpleasant, exposed.

Obscure—hidden, concealed, indistinct, difficult, dark, abstruse.

Observance—ceremony, rite, attention, form, respect.

Observant—watchful, attentive, mindful, regardful.

Observe—see, notice, watch, follow, remark, keep.

Obsolete—disused, old, worn-out, antiquated, ancient, old-fashioned.

Obstacle—impediment, obstruction, difficulty, hinderance.

Obstinate—stubborn, resolute, headstrong.

Obstruct—impede, hinder, stop, prevent.

Obtain—gain, secure, get, win, acquire, procure, earn.

Obvious—plain, apparent, open, clear, evident, visible, manifest.

Occupation—work, profession, calling, trade, business, avocation, employment.

Occupy—keep, hold, use, possess.

Occurrence—event, contingency, adventure, incident.

Odor—smell, fragrance, perfume, scent.

Offense—trespass, crime, injury, sin, outrage, insult, misdeed, wrong, transgression.

Offensive—mean, abusive, insulting, impertinent, insolent, rude, scurrilous, obnoxious, opprobrious.

Officious—busy, active, forward, obtrusive, intrusive.

Only—solely, singly, alone, simply, merely.

Open—unravel, reveal, disclose, unlock.

Opening—fissure, aperture, hole, cavity.

Operation—performance, action, agency.

Opinion—belief, idea, sentiment, notion.

Opinionated—obstinate, stubborn, stiff, egotistical, conceited, self willed.

Opponent—opposer, adversary, foe, enemy, antagonist.

Opposite—contrary, repugnant, adverse.

Opprobrious—reproachful, insolent, abusive, offensive, insulting, scandalous, scurrilous.

Opprobrium—shame, disgrace, reproach, infamy, ignominy.

Oration—speech, sermon, lecture, discourse, address, harangue.

Ordain—appoint, invest, order, prescribe.

Order—brotherhood, fraternity, rank, method, succession, series, degree, genus.

Order—mandate, injunction, precept, command.

Orderly—precise, regular, systematic, methodical.

Ordinary—usual, common.

Origin—rise, cause, source, foundation, beginning, descent, fountain.

Original—primitive, first, pristine, primary.

Ornament—decorate, beautify, adorn, deck, embellish.

Ornate—decorated, adorned, embellished, bedecked, garnished.

Ostentation—parade, show, display, boast.

Outrage—insult, injure, affront, violence.

Outward—extraneous, apparent, intrinsic.

Overbearing—repressive, impertinent, haughty, lordly.

Overcome—vanquish, conquer, surmount, subdue

Overflow—fill, inundate, deluge, abound

Oversight—mistake, error, misapprehension, inattention.

Overwhelm—overpower, crush, upturn, overthrow, subdue.

Owner—holder, proprietor, master, possessor.

P

Pacify—calm, still, quiet, soothe, conciliate.

Pain—distress, afflict, torture, torment, suffer, hurt.

Paint—portray, represent, depict, sketch, color, describe, delineate.

Pair—join, two, couple, brace.

Pale—fade, wan, white, pallid, fair.

Palpable—gross, plain, apparent, discernible, perceptible.

Palpitate—tremble, throb, beat, flutter, gasp, pant.

Pang—torture, torment, distress, agony, anguish, sorrow.

Pardon—acquit, forgive, clear, free, discharge, release, remit.

Parsimonious—mean, frugal, miserly, avaricious, penurious, niggardly.

Part—share, portion, division, piece, action.

Particular—individual, specific, exact, appropriate, circumstantial, peculiar, exclusive, punctual, distinct.

Particularly—chiefly, mainly, principally, especially, distinctly, specifically.

Partisan—disciple, adherent, follower.

Partner—associate, accomplice, colleague, coadjutor.

Passion—desire, feeling, love, anger, excitement.

Passionate—hot, angry, irascible, hasty, excitable.

Passive—submissive, unresisting, patient, resigned.

Pathetic—affecting, touching, moving.

Patience—endurance, fortitude, resignation.

Patient—resigned, composed, enduring, calm, passive, an invalid.

Peaceable—quiet, calm, serene, tranquil, mild, gentle.

Peevish—fretful, disagreeable, petulant, cross, captious, irritable.

Penalty—punishment, pain, fine, forfeiture, chastisement.

Penitence·contrition, remorse, compunction, repentance.

Penurious—parsimonious, sparing, miserly, niggardly, beggarly.

Penury—want, poverty, distress, indigence, need.

Perceive—observe, discern, distinguish.

Perception—belief, conception, sentiment, idea, sensation, notion.

Peremptory—positive, despotic, arbitrary, dogmatical, absolute.

Perfect—done, complete, finished.

Perfidious—false, treacherous, faithless.

Perforate—pierce, bore, penetrate.

Perform—execute, accomplish, effect, produce, achieve, fulfill.

Perfume—odor, smell, scent, exhalation, fragrance.

Period—circuit, date, age, epoch, era.

Permit—allow, suffer, consent, admit, tolerate, yield.

Pernicious—noisome, ruinous, destructive, mischievous, hurtful, noxious.

Perpetual—uninterrupted, incessant, unceasing, constant, continual.

Perplex—bewilder, annoy, confuse, involve, molest, puzzle, embarrass, harass, entangle.

Persevere—endure, continue, persist, insist, pursue, prosecute.

Perspicuity—clearness, transparency, brilliancy.

Persuade—urge, induce, exhort, influence, entice, prevail upon.

Perverse—stubborn, untractable, unmanageable, crooked, cross.

Pestilential—destructive, mischievous, epidemical, infectious, contagious.

Petition—prayer, supplication, request, suit, entreaty.

Picture—likeness, image, effigy, representation.

Pious—spiritual, devout, godly, religious.

Pique—offense, grudge, dislike, malice, spite, rancor.

Pity—sympathy, commiseration, compassion, condolence, mercy.

Place—site, ground, post, position.

Placid—still, calm, gentle, quiet, tranquil, serene.

Plague—perplex, embarrass, tantalize, annoy, importune, vex, torment.

Plain—perceptible, discernible, manifest, obvious, clear, apparent, evident, distinct.

Plan—design, contrivance, device, scheme, arrangement, project, stratagem.

Pleasant—cheerful, jocular, gay, vivacious, agreeable, facetious, witty.

Please—gratify, satisfy, humor, delight.

Pleasure—satisfaction, delight, happiness, enjoyment, joy.

Pledge—pawn, deposit, security, hostage, earnest.

Plentiful—bounteous, abundant, copious, exuberant, ample, plenteous.

Pliant—lithe, limber, yielding, bending, supple, flexible, pliable.

Plight—predicament, state, case, situation, condition, conjuncture.

Plot—plan, arrangement, project, conspiracy, combination, scheme, intrigue.

Polite—courteous, well-bred, civil, polished, refined, genteel, affable.

Politeness—good manners, civility, courtesy, suavity, good breeding.

Politic—wise, careful, artful, cunning, civil, prudent.

Pollute—corrupt, taint, defile, infect, contaminate

Pompous—lofty, stately, ostentatious. showy, dignified, magnificent.

Ponder—study, reflect, think, muse, consider.

Portion—piece, part, quantity, share, division, dower, fortune.

Positive—confident, certain, real, dogmatic, sure, absolute.

Possess—keep, hold, have, enjoy, occupy.

Postpone—retard, delay, prolong, protract, defer, procrastinate.

Posture—figure, gesture, action, position, attitude.

Potent—powerful, strong, vigorous, mighty, forcible.

Poverty—want, need, indigence, penury, suffering.

Practicable—possible, feasible, available.

Practice—custom, style, manner, form, use, habit.

Praise—eulogize, applaud, laud, admire, commend.

Prayer—application, petition, request, suit, entreaty, supplication.

Precarious—uncertain, dubious, doubtful, equivocal, unreliable.

Precedence—priority, superiority, preference.

Preceding—anterior, previous, prior, antecedent, former, foregoing.

Precept—maxim, rule, principle, injunction, law, doctrine, mandate, command.

Precious—choice, costly, valuable, expensive, uncommon, rare.

Precise—careful, particular, exact, accurate, correct, nice.

Preclude—intercept, prevent, obviate, hinder.

Predicament—condition, plight, position, situation.

Predict—prophesy, foretell.

Predominant—prevalent, overruling, controlling, supreme, prevailing.

Predominate—prevail, rule over.

Preference—advancement, priority, choice.

Prejudice—bias, injury, hurt, disadvantage.

Preliminary—previous, preparatory, introductory, antecedent.

Prepare—arrange, qualify, fit, equip, make ready.

Preposterous—impossible, ridiculous, absurd, foolish.

Prerogative—immunity, privilege.

Prescribe—dictate, ordain, appoint.

Preserve—uphold, maintain, protect, spare, save.

Pressing—urgent, emergent, importunate, crowding, squeezing, forcing.

Presume—guess, suppose, think, surmise, conjecture, believe.

Presuming—forward, arrogant, presumptuous.

Pretext—excuse, pretense, pretension.

Pretty—lovely, beautiful, fine, agreeable.

Prevailing—dominant, ruling, overcoming, prevalent, predominating.

Prevent—impede, obstruct, hinder, obviate, preclude.

Previous—before, prior, anterior, preliminary, introductory.

Price—value, worth, expense, cost.

Pride—self-esteem, arrogance, haughtiness, conceit, ostentation, loftiness, vanity.

Primary—elemental, first, original, pristine.

Principal—main, chief, capital, head, leading, important.

Principle—motive, tenet, constituent part, doctrine, element.

Print—impress, stamp, mark.

Prior—before, previous, former, antecedent, preceding, anterior.

Priority—preference, precedence, pre-eminence.

Pristine—original, first, primitive.

Privacy—seclusion, solitude, retirement, loneliness.

Privilege—prerogative, right, advantage, immunity, exemption.

Probability—supposition, likelihood, chance.

Probity—reliability, uprightness, honesty, integrity, veracity.

Proceed—progress, arise, issue, advance, emanate.

Proceeding—transaction, course, progression, work.

Proclaim—declare, publish, announce, tell, advertise, promulgate.

Proclivity—liking, tendency, inclination, proneness.

Procure—obtain, acquire, gain.

Prodigal—lavish, extravagant, wasteful.

Prodigious—great, astonishing, vast, large, amazing, monstrous.

Profane—secular, irreverent, impious, irreligious.

Profession—calling, employment, business, vocation, work, labor.

Proficiency—advancement, improvement, progress.

Profit—gain, advantage, benefit, emolument.

Profligate—depraved, wicked, corrupt, sinful, vicious, abandoned.

Profuse—lavish, wasteful, prodigal, extravagant.

Progeny—descendants, offspring, race, issue.

Project—invent, design, scheme, plan.

Prolific—productive, fruitful, fertile.

Prolix—tiresome, tedious, long, diffuse.

Prolong—extend, delay, protract, postpone, retard, procrastinate.

Prominent—eminent, conspicuous, distinguished.

Promise—agreement, assurance, engagement, declaration, pledge, word, obligation.

Promote—raise, encourage, forward, advance.

Prompt—quick, active, ready, assiduous.

Pronounce—say, speak, utter, declare, affirm, articulate, enunciate.

Proof—evidence, testimony, argument.

Propagate—multiply, increase, disseminate, diffuse, circulate, spread, extend.

Propensity—liking, inclination, proneness, tendency, bias.

Proper—fit, right, suitable, just, appropriate.

Propitious—favorable, auspicious.

Propitiate—conciliate, appease, reconcile.

Proportionate—equal, adequate, commensurate.

Propose—offer, apply, tender, intend, purpose, bid.

Prospect—view, landscape, survey.

Prospective—future, foreseeing, hereafter, forward.

Prosperous—fortunate, lucky, flourishing, successful.

Protect—uphold, guard, shield, maintain, defend, cherish, foster, patronize.

Protract—withhold, retard, prolong, delay, defer, postpone.

Proud—haughty, assuming, arrogant, lofty, vain, conceited.

Proverb—maxim, saying, adage.

Provide—procure, furnish, supply, prepare.

Provident—cautious, prudent, economical, careful.

Proviso—requirement, condition, stipulation.

Provoke—excite, irritate, enrage, aggravate, exasperate, tantalize.

Prudence—forethought, carefulness, wisdom, discretion, judgment.

Publish—announce, promulgate, proclaim, advertise, declare

Puerile—infantile, boyish, childish, juvenile.

Pull—bring, haul, draw, drag.

Punctual—prompt, particular, exact.

Punish—whip, chastise, correct, discipline.

Pursue—follow, prosecute, chase, persist, continue, persevere.

Puzzle—confound, perplex, embarrass, bewilder, entangle.

Q

Quack—imposter, pretender, empiric, charlatan.

Qualified—capable, fit, adapted, competent.

Quarrel—fight, affray, riot, contest, battle, contention, altercation, dispute, tumult.

Query—question, interrogatory, inquiry.

Question—ask, examine, doubt, dispute, consider, inquire, interrogate.

Questionable—suspicious, doubtful.

Quick—rapid, active, lively, swift, prompt, expeditious, brisk.

Quiet—calm, repose, tranquillity, rest, ease, peaceable, placid, still.

Quit—depart, leave, resign, abandon, forsake, relinquish.

Quota—rate, share, proportion.

Quote—copy, relate, cite, adduce.

R

Race—lineage, family, breed, generation, course.

Radiance—light, glory, brightness, brilliancy.

Rage—indignation, anger, fury.

Raise—heighten, elevate, exalt, erect, collect, propagate.

Rank—class, degree, place, position.

Ransom—purchase, free, redeem.

Rapacious—voracious, greedy, ravenous.

Rapidity—swiftness, fleetness, celerity, speed, agility, velocity.

Rapture—joy, delight, transport, ecstasy.

Rare—scarce, uncommon, excellent, singular, unusual, incomparable, raw.

Rash—impulsive, hasty, violent, thoughtless, headstrong.

Rate—price, quota, proportion, ratio, value, degree, assessment.

Ravenous—voracious, rapacious, greedy.

Ray—dawn, beam, gleam, streak, glimmer.

Real—certain, true, genuine, positive, actual.

Realize—reach, procure, achieve, consummate, accomplish, effect.

Reason—purpose, proof, motive, argument, origin, understanding.

Reasonable—fair, probable, just, moderate, equitable, honest, rational.

Rebuke—reprimand, reproach, reproof, censure.

Recant—revoke, recall, renounce, withdraw, retract, abjure.

Recede—retire, retrograde, fall back, retreat.

Recite—repeat, rehearse.

Reckon—count, number, estimate, calculate, compute.

Reclaim—reform, recover, correct.

Recollection—memory, remembrance, reminiscence.

Recompense—satisfaction, pay, price, reward, equivalent, remuneration.

Reconcile—propitiate, conciliate.

Recruit—repair, retrieve, replace, recover.

Rectify—mend, improve, correct, amend, reform.

Redeem—restore, rescue, recover, ransom.

Redress—relief, remedy.

Refer—propose, suggest, allude, intimate, hint.

Refined—graceful, genteel, polished, polite, elegant.

Reform—correct, amend, rectify, improve, better

Refractory—unmanageable, unruly, contumacious, perverse.

Refrain—forego, forbear, spare, abstain.

Regale—refresh, entertain, feast, gratify.

Regard—respect, esteem, value, reverence, mind, heed.

Regardless—careless, negligent, indifferent, unconcerned, unobservant, heedless.

Region—section, quarter, district, country.

Regret—sorrow, complaint, grief, lament.

Regulate—control, rule, direct, govern, dispose, adjust.

Rehearse—detail, repeat, recite, recapitulate.

Reject—refuse, deny, decline, repel.

Rejoinder—response, answer, reply.

Reliance—trust, belief, repose confidence, dependence

Relieve—assist, help, succor, aid, alleviate, mitigate, support.

Religious—pious, devout, holy.

Remain—continue, stay, abide, tarry, sojourn.

Remainder—rest, residue, remnant.

Remark—comment, observation note.

Reminiscence—recollection, remembrance.

Remiss—heedless, negligent, inattentive, careless, thoughtless.

Remit—send, transmit, liberate, abate, forgive, pardon, relax.

Remorse—penitence, contrition, distress.

Renew—revive, refresh, renovate.

Renounce—leave, resign, abdicate, abandon, forego, relinquish, quit.

Renown—reputation, celebrity, fame.

Repair—improve, retrieve, recover, restore.

Reparation—restitution, restoration, amends.

Repeal—cancel, annul, revoke, abolish, abrogate, destroy.

Repeat—detail, rehearse, recite.

Repetition—tautology, prolixity iteration, reiteration

Replenish—supply, fill, refill.

Repose—ease, sleep, rest, quiet

Reproach—blame, reprove, censure, condemn, upbraid, reprimand.

Repugnance—aversion, abhorrence, antipathy, dislike, hatred.

Repugnant—hostile, adverse, opposite, contrary.

Reputation—repute, fame, character, honor, renown, credit.

Request—solicit, ask, demand, entreat, beg, beseech, implore.

Requisite—important, necessary, essential, expedient.

Research—investigation, study, examination, inquiry.

Resemblance—similarity, semblance, similitude, likeness.

Residence—home, abode, house, dwelling, domicile.

Residue—leavings, remainder, rest.

Resign—yield, abdicate, renounce, relinquish, forego.

Resignation—patience, endurance, submission, acquiescence

Resist—endure, oppose, withstand.

Resolution—firmness, determination, fortitude, courage, decision

Resort—visit, frequent, haunt.

Respect—esteem, regard, deference, attention, consideration, good-will, estimation

Respectful—deferential, dutiful, obedient, civil.

Respite—delay, suspension, interval, reprieve.

Response—reply, answer, rejoinder.

Responsible—amenable, answerable, accountable.

Rest—quiet, ease, repose, intermission, stop, cessation, others, remainder.

Restore—cure, renew, return repay, rebuild.

Restrain—confine, repress, restrict, coerce, limit, constrain.

Restrict—limit, circumscribe, hold, bind.

Result—effect, issue, ultimate, consequence, event.

Retain—hold, detain, keep, reserve.

Retard—hinder, defer, protract, postpone, delay, procrastinate, prolong, prevent, impede.

Retire—recede, withdraw, retreat, secede.

Retract—annul, take back, revoke, recant, recall.

Retrieve—renew, recover, regain.

Reveal—impart, divulge, communicate, disclose, expose

Revenge—vindicate, avenge.

Revere—adore, worship, reverence, venerate.

Review—examine, survey, notice, revision.

Revive—enliven, renew, reanimate, refresh, renovate.

Revoke—cancel, annul, abolish, repeal, abrogate, efface, retract.

Reward—recompense, remuneration, compensation, satisfaction

Riches—wealth, opulence, affluence.

Ridicule—deride, banter, laugh at.

Ridiculous—droll, absurd, ludicrous, preposterous, unreasonable, improbable

Right—correct, just, honest, proper, privilege, claim, direct, straight, immunity.

Righteous—just, godly, upright honest, incorrupt, virtuous

Rite—form, custom, ceremony, observance

Road—path, way, course, route.

Roam—wander, ramble, stroll, range, rove.

Room—chamber, space, place, apartment.

Rough—harsh, uncivil, rude, uncouth, unmannerly, unpolished, rugged, severe, stormy.

Round—globular, spherical, orb, circuit, tour.

Route—path, course, way road.

Rude—rough, impertinent, coarse, impudent, unpolished, saucy, disgreeable, bold.

Rule—authority, law, regulation, government, custom, maxim, habit, precept, guide

S

Sacred—holy, divine, devoted

Sad—sorrowful, mournful, dejected, gloomy, melancholy.

Sagacity—perception, penetration, acuteness, discernment

Salary—wages, pay, stipend hire, reward, remuneration.

Sanction—maintain sustain, uphold, countenance, ratify support.

Sapient—discreet, wise, sage, sagacious.

Sarcasm—satire, irony, ridicule.

Satisfaction—compensation, remuneration, contentment, atonement, reward.

Saving—prudent, thrifty, frugal, economical, close, sparing, stingy, penurious.

Saying—adage, maxim, proverb, by-word, relating, speaking, uttering, communicating.

Scandal—disgrace, reproach, discredit, baseness, infamy

Scarce—uncommon, unusual, singular, rare.

Scatter—disseminate, dissipate, spread, disperse.

Scent—odor smell, perfume fragrance.

Scoff—ridicule, sneer, jeer, jibe, belittle.

Scope—object, tendency, aim, drift.

Scruple—hesitate, doubt, fluctuate.

Scrupulous—truthful, upright, correct, careful, conscientious, cautious.

Scrutinize—search, examine, investigate.

Scurrilous—disgusting, abusive, offensive, insulting, insolent.

Search—inquiry, examination, scrutiny, pursuit, investigation.

Secede—withdraw, retire, recede.

Seclusion—quietude, privacy, solitude, retirement, loneliness.

Secondary—subordinate, inferior

Secret—hidden, quiet, still, concealed, latent, mysterious, clandestine.

Secular—temporal, wordly.

Secure—safe, certain, confident, sure, procure, warrant.

Security—pledge, warranty defense, guard, protection.

Sedate—serene, calm, unruffled, unconcerned, still, quiet, composed.

Seduce—decoy, betray, attract, allure.

See—examine, look, behold, observe, perceive, view.

Sense—idea, feeling, meaning, judgment, import, reason.

Sensitive—keen, susceptible, appreciative

Sentence—mandate, judgment, decision, period, phrase, proposition.

Sentiment—expression, opinion, notion, feeling

Separate —dissociate, detach, disengage.

Settle—determine, fix, establish, arrange, adjust, regulate.

Settled—conclusive, decided, confirmed, established.

Sever — separate, disjoin, divide, detach.

Several — sundry, different, various, diverse.

Severe—cold, stern, harsh, sharp, rigid, cruel, heartless, rough, strict, unyielding, austere, rigorous.

Shake — shiver, quiver, shudder, quake, agitate, totter.

Shame—dishonor, disgrace, ignominy.

Shameless — insolent, impudent, immodest, indelicate, indecent.

Shape—form, fashion, mould.

Share—divide, distribute, apportion, participate, partake.

Sharpness—shrewdness, penetration, keenness, acuteness, sagacity, cunning.

Shelter — shield, defend, screen, harbor, protect, cover.

Shine — illumine, glisten, gleam, glitter, glare.

Shining — bright, glittering, radiant, glistening, brilliant.

Shocking — disgusting, terrible, dreadful, horrible.

Short—brief, concise, scanty, defective, brittle.

Shorten—lessen, contract, reduce, abridge, curtail.

Show—display, exhibition, pomp, parade, representation, spectacle, sight.

Showy—grand, ostentatious, gay, gaudy, fine, sumptuous.

Shrewd—sharp, acute, keen, precise.

Shun—evade, avoid, elude.

Sickly—unwell, sick, ill, diseased, indisposed.

Sign—indication, omen, symptom, signal, note, mark, token.

Signify—imply, express, betoken, denote, declare, utter, intimate, testify.

Silence—quietude, stillness, muteness.

Silent — dumb, mute, speechless, still.

Silly—ridiculous, foolish, absurd, stupid, dull, weak, simple.

Similarity — resemblance, likeness, similitude.

Simple—weak, silly, artless, foolish, unwise, stupid, plain, single.

Simply—solely, merely, only.

Since—for, as, inasmuch, after.

Sincere—true, honest, frank, upright, incorrupt, plain

Singular — particular, eccentric, odd, strange, remarkable, rare, scarce.

Situation — place, position, employment, site, locality, case, condition, plight.

Skillful — expert, adroit, adept, dexterous, accomplished.

Slander—defame, vilify, calumniate, detract.

Slavery — servitude, bondage, captivity

Slender — slight, slim, fragile, thin.

Slow — tardy, dilatory, tedious, dull.

Small—little, minute, diminutive, narrow, infinitesimal

Smooth—easy, mild, bland, even, level

Smother — suffocate, stifle, suppress, conceal

Snarling — snappish, waspish, surly

Sober — grave, moderate, temperate, abstemious.

Social—sociable, companionable, convivial, familiar.

Society — fellowship, company, congregation, association, community.

Soft — flexible, ductile, yielding, pliant, mild, compliant.

Solicit—request, ask, entreat, implore, beg, beseech, supplicate, importune.

Solicitation — entreaty, invitation, importunity.

Solicitude — care, earnestness, anxiety.

Solid—enduring, firm, hard, substantial.

Solitary — sole, alone, desolate, only, lonely, remote, retired.

Soothe—quiet, compose, appease, calm, pacify, assuage, tranquilize.

Sorrow—trouble, grief, affliction.

Sort—order, kind, species.

Sound—tone, firm, whole, hearty, healthy, sane.

Sour — tart, acid, acrimonious, sharp.

Source—head, origin, fountain, cause, spring, reason.

Spacious — capacious, ample, large.

Sparkle—glitter, glisten, shine, glare, radiate, corruscate.

Speak — utter, talk, articulate, pronounce, converse, say, tell, recite, relate.

Species—order, kind, class, sort.

Specific—definite, particular, special.

Specimen — sample, model, pattern.

Spectator — beholder, observer, auditor.

Speech—oration, address, lecture, harangue, sermon.

Speechless—dumb, silent, mute.

Spend — expend, exhaust, dissipate, squander, waste.

Sphere—orb, circle, globe.

Spirited — quick, animated, ardent, vivacious, active.

Spiritual—ethereal, immaterial, unearthly, incorporeal.

Spite—pique, malice, grudge, malignity, hate.

Splendid — superb, magnificent, grand, sublime, heavenly.

Splendor — magnificence, luster, brightness, brilliancy.

Splenetic—peevish, melancholy, morose, sullen, gloomy, fretful.

Sport—play, game, amusement, pastime, diversion, recreation.

Spotless—faultless, unblemished, blameless, unsullied, clear, untarnished, pure, innocent, stainless.

Spread—distribute, diffuse, circulate, expand, disperse, disseminate, propagate, scatter, dispense, sow.

Spring—leap, arise, start, flow, proceed, emanate, jump, issue.

Sprinkle—bedew, water, scatter, besprinkle.

Sprout — vegetate, germinate, bud

Stability — fixedness, continuity, steadiness, firmness.

Stain—mar, soil, tarnish, blemish, blot, flaw, spot, speck, tinge, color, discolor.

Stammer — hesitate, stutter, falter

Stamp—mark, print, impress.

Standard -test, rule, criterion.

State — situation, condition, position, plight, predicament

Station — place, situation, post, position

Stay—dependence, reliance, staff, prop, abide, remain, continue, delay, hinder, support.

Sterility—barrenness, unfruitfulness

Stern—unfeeling, severe, austere, strict, cold, rigid, rigorous.

Still—quiet, calm, silent, appease, assuage, lull, pacify.

Stimulate—arouse, excite, incite, urge, impel, encourage, instigate

Stock — supply, collection, fund, accumulation, store, provision, cattle.

Stop—rest, intermission, vacation, cessation, delay, hinder, impede, check.

Story — tale, anecdote, incident, memoir.

Straight—direct, immediate.

Strange — unusual, curious, odd, singular, surprising, eccentric.

Stratagem—deception, cheat, artifice, fraud, trick, imposture, delusion.

Strength — potency, authority, power, force, might.

Strict—precise, exact, particular, accurate, nice, severe, harsh, rigorous, stern.

Strife—disagreement, dissension, discord, contest.

Strong — able, powerful, robust, stout, vigorous, firm, muscular, hardy.

Style — custom, mode, manner, phraseology, diction.

Subdue—vanquish, conquer, overcome, subjugate, subject, surmount.

Subject—control, liable, exposed, object, matter, material.

Subjoin—attach, connect, annex, affix.

Sublime—lofty, elevated, great, exalted, grand, magnificent.

Submissive — obedient, yielding, humble, compliant.

Subordinate — subject, subservient, inferior.

Subsistence — livelihood, living, sustenance, maintenance, support.

Substantial — reliable, strong, solid, stout, real, responsible.

Substitute — agent, representative, exchange, change.

Subtle—sly, artful, cunning, deceitful, crafty, wily, perfidious, insidious, arch, acute, fine.

Subtract—withdraw, deduct, take from

Subvert — ruin, overthrow, reverse, controvert, invert, reverse.

Successful — prosperous, lucky, winning, fortunate.

Succession — series, order, continuance.

Succor—defend, help, aid, assist, relieve.

Sudden — unexpected, unlooked for, unanticipated, hasty.

Suffer--endure, tolerate, permit, bear, allow.

Suffocate—smother, choke, stifle.

Sufficient — plenty, abundance, enough, competent, adequate.

Suffrage—vote, ballot, aid, voice.

Suggest—propose, insinuate, hint, allude, intimate.

Suitable — appropriate, fit, becoming, agreeable, expedient.

Suitor—beau, wooer, lover, petitioner.

Summon—cite, call, invite, bid, convoke.

Sundry—several, various, diverse, different.

Superficial—flimsy, slight, shallow.

Supersede — supplant, overrule, displace

Supplicate—solicit, entreat, beg, beseech, ask, implore.

Support—maintain, uphold, sustain, defend, encourage, second, prop, protect, favor, forward, cherish, assist, endure.

Sure—reliable, confident, certain, infallible.

Surmise—presume, think, guess, suppose, believe, conjecture.

Surmount — subdue, overcome, vanquish, conquer.

Surpass — beat, outdo, outstrip, excel, exceed.

Surprise—astonishment, admiration, wonder, amazement.

Surrender — yield, resign, give up, deliver.

Surround — encompass, enclose, encircle, environ.

Survey—review, prospect, retrospect.

Suspense—hesitation, doubt, uncertainty.

Suspicion — distrust, jealousy, apprehension.

Sustain — carry, bear, support, uphold, maintain.

Sustenance — livelihood, living, maintenance, support.

Swiftness—speed, rapidity, velocity, fleetness, quickness, celerity.

Symbol—illustration, type, figure, emblem, metaphor.

Symmetry — harmony, proportion.

Sympathy — compassion, condolence, agreement, commiseration.

Symptom — evidence, indication, token, sign, mark, note.

System—order, method.

T

Talent — faculty, ability, gift, endowment, capability, intellectuality.

Talk—conference, discourse, chat, conversation, sermon, communication, lecture, dialogue, colloquy.

Tantalize—plague, tease, taunt, provoke, irritate, torment, aggravate.

Taste — perception, discernment, judgment, flavor, savor, relish.

Tax—duty, assessment, rate, toll, tribute, contribution, custom.

Tedious — wearisome, slow, tiresome, tardy.

Tell — inform, communicate, reveal, disclose, acquaint, impart, mention, state, talk, report.

Temper—mood, humor, temperament, disposition.

Temperate — moderate, sober, abstemious, abstinent.

Temporal — worldly, mundane, sublunary, secular.

Temporary—uncertain, fleeting, transitory, transient.

Tempt—allure, induce, entice, attract, decoy, seduce.

Tender—propose, offer, bid.

Tenderness—fondness, love, humanity, affection, benignity.

Tenet — belief, dogma, doctrine, principle, position, opinion.

Terms—conditions, words, expressions, language.

Terminate — close, finish, end, complete.

Terrible—awful, frightful, fearful, shocking, terrific, horrible.

Terror—alarm, fear, dread, consternation, apprehension, fright.

Test — experiment, proof, experience, trial, standard, criterion.

Testify — prove, declare, swear, signify, witness, affirm.

Testimony—proof, evidence.

Therefore — wherefore, accordingly, then, hence, so, consequently.

Think—consider, deliberate, meditate, ponder, conceive, contemplate, imagine, surmise.

Though—allow, while, although.

Thought—contemplation, meditation, fancy, idea, supposition, reflection, conception, conceit.

Thoughtful—anxious, considerate, careful, attentive, discreet, contemplative.

Thoughtless—inconsiderate, indiscreet, careless, foolish, hasty, unthinking.

Throw—heave, cast, hurl, fling.

Time—period, season, age, date, duration, era, epoch.

Timely—opportune, seasonable, early.

Tired—wearied, fatigued, harassed.

Title—name, appellation, claim.

Token—emblem, sign, indication, symptom, mark, note.

Tolerate—permit, allow, suffer.

Tortuous—tormenting, crooked, twisted, winding.

Total—complete, whole, entire, gross, sum.

Touching—moving, pathetic, affecting.

Tour—round, circuit, jaunt, trip, journey, ramble, excursion.

Trace—clue, track, mark, vestige.

Trade—vocation, business, calling, labor, occupation, dealing, traffic.

Traduce—injure, condemn, censure, depreciate, degrade, decry, calumniate, detract.

Tranquillity—stillness, peace, quiet, calm.

Transact—manage, conduct, negotiate.

Transcend—surpass, excel, exceed, outdo.

Transparent—clear, pellucid, pervious, translucent.

Transient—brief, fleeting, short.

Transport—delight, rapture, ecstasy.

Treacherous—insidious, faithless, dishonest, perfidious, heartless.

Trepidation—palpitation, emotion, trembling, tremor, agitation.

Trespass—violation, transgression, offense, misdemeanor.

Trial—endeavor, attempt, effort, experiment, test, proof, temptation.

Trick—cheat, fraud, deception, artifice, imposture, stratagem, jugglery.

Trifling—insignificant, inconsiderable, unimportant, light, futile, petty, frivolous.

Trip—journey, jaunt, excursion, tour, ramble, voyage.

Trouble—anxiety, vexation, adversity, affliction, sorrow, distress.

Troublesome—annoying, disturbing, vexing, perplexing, irksome, teasing, harassing, importunate.

True—honest, candid, sincere, reliable, plain, upright.

Truth—fidelity, veracity, candor, faithfulness, honesty.

Try—endeavor, attempt.

Turbulent—raging, tumultuous, seditious, mutinous, riotous.

Turn—revolve, whirl, twist, circulate, wind, gyrate, contort, bend, distort, wheel.

Type—illustration, symbol, figure, emblem, mark.

U

Ultimate—latest, last, final, end

Umpire—judge, arbitrator, arbiter.

Unbelief—incredulity, disbelief, skepticism, infidelity.

Unblemished—faultless, blameless, spotless, irreproachable, untarnished, stainless.

Unceasingly—eternally, perpetually, always, constantly, continually.

Unchangeable—unalterable, immutable.

Uncommon—singular, unusual, rare, unique, infrequent, choice, scarce.

Unconcerned—careless, regardless, uninterested, indifferent.

Uncover—reveal, expose, strip, discover.

Undaunted—courageous, bold, fearless, intrepid.

Undeniable—indisputable, incontrovertible, unquestionable.

Under—subordinate, lower, beneath, below, inferior, subject, subjacent.

Understanding—conception, intelligence, comprehension, sense, perception, faculty, reason, intellect.

Undetermined—uncertain, irresolute, hesitating, wavering, unsteady, doubtful, vacillating, fluctuating.

Unfaithful—untruthful, faithless, dishonest, disloyal, treacherous, perfidious.

Unfold—explain, divulge, reveal, unravel, develop, expand, open, display.

Unhandy—ungainly, awkward, uncouth, clumsy.

Unhappy—distressed, miserable, unfortunate, afflicted, wretched.

Uniform—even, alike, equal, same.

Unimportant—trivial, trifling, immaterial, insignificant, petty, inconsiderable.

Unlearned—uninformed, unlettered, ignorant, illiterate.

Unlike—distinct, dissimilar, different.

Unlimited—infinite, boundless, unbounded, illimitable.

Unquestionable—indubitable, undeniable, indisputable, incontrovertible.

Unravel—unfold, disentangle, extricate, reveal.

Unrelenting—unforgiving, hardhearted, inexorable, relentless.

Unruly—unmanageable, uncontrollable, refractory, ungovernable.

Unseasonable—ill-timed, unfit, untimely, unsuitable, late.

Unsettled—doubtful, wavering, undetermined, unsteady, vacillating.

Unspeakable—unutterable, inexpressible.

Unstable—inconstant, mutable, vacillating, changeable, wavering.

Untimely—inopportune, premature, unseasonable, unsuitable.

Unwilling—loth, backward, disinclined, disliking, averse, reluctant.

Upbraid—reprove, censure, reproach, blame.

Uproar—noise, confusion, bustle, tumult, disturbance.

Urbanity—courtesy, affability, suavity, civility.

Urge—press, incite, impel, instigate, stimulate, encourage, animate.

Urgent—importunate, pressing, earnest.

Usage—habit, fashion, custom, treatment, prescription.

Use—practice, custom, habit, service, usage, advantage, utility.

Usually—generally, commonly.

Utility—use, service, benefit, advantage, convenience, usefulness.

Utterly—perfectly, completely, fully.

V

Vacant—void, empty, devoid, unused.

Vague—unsettled, indefinite.

Vain—conceited, useless, fruitless, idle, ineffectual.

Valedictory—farewell, taking leave.

Valuable—expensive, costly, precious, useful, worthy, estimable.

Value—price, worth, rate, appreciation, estimation, account, appraise, assess, compute, regard, respect.

Vanity—pride, haughtiness, conceit, arrogance.

Vanquish—subdue, overcome, slay, conquer, confute, subjugate.

Variable—transitory, capricious, fickle, unsteady, changeable, versatile, wavering.

Variation—deviation, change, variety, vicissitude.

Variety—diversion, change, difference.

Various—sundry, different, diverse.

Vehement—hot, eager, ardent, fiery, passionate, violent, impetuous.

Velocity—speed, celerity, swiftness, fleetness, rapidity, quickness.

Venerate—worship, reverence, respect, adore.

Veracity—honesty, truth, integrity.

Verbal—oral, vocal.

Vestige—evidence, mark, trace, track.

Vexation—chagrin, uneasiness, trouble, sorrow, mortification.

Vicinity—locality, neighborhood, nearness, section.

View—picture, prospect, survey, landscape, see, look, behold.

Vigorous—robust, active, energetic, powerful, agile, forcible, potent.

Violent—turbulent, boisterous, impetuous, furious.

Virtue—chastity, purity, efficacy, goodness.

Visible—apparent, discernible, evident, plain, distinct, manifest, doubtless, obvious.

Visionary—fanatic, enthusiast, dreamer, imaginary, fanatical.

Volatility—lightness, flightiness, levity, giddiness, sprightliness, liveliness.

Vouch—assure, warrant, affirm, aver, protest, attest.

Vulgar—ordinary, common, low, mean.

W

Wages—stipulation, hire, salary, pay, allowance.

Wakeful—vigilant, attentive, observant, watchful.

Wander—roam, stroll ramble, rove, range, journey

Want—indigence, need, poverty, lack.

Ware—goods, merchandise commodity.

Warlike—military, martial.

Warmth—fervor, ardor, cordiality, animation, heat, fervency, vigor, glow, zeal, vehemence.

Warning—notice, advice, monition, caution.

Wary—discreet, guarded, watchful, cautious, circumspect.

Waste—loose, dissipate, spend, expend, consume, lavish, squander.

Wasteful—profuse extravagant, lavish, prodigal.

Watchful—cautious, observant, vigilant, careful, circumspect, attentive, wakeful.

Waver—hesitate, vacillate fluctuate, scruple, to be undetermined.

Way—plan, method, course, manner, system, means, fashion, road, route.

Weak—infirm, feeble, enfeebled, debilitated, enervated.

Wealth—opulence, riches, affluence.

Weakness—debility, feebleness, frailty, infirmity, languor, failing, imbecility, silliness, folly.

Weariness—languor, lassitude, tediousness, fatigue.

Weary—annoy, distress, harass, jade, tire, vex, perplex, subdue.

Wedding—marriage, nuptials.

Weight—load, burden, heaviness, gravity, importance, signification.

Welcome—desirable, agreeable, grateful, acceptable.

Wherefore—consequently, accordingly, so, then, therefore, thence, hence.

Whiten—blanch, fade, bleach.

Whole—undivided, complete, entire, perfect, total, uninjured, sum.

Wicked—sinful, guilty, unjust, flagrant, impious, atrocious, villainous, criminal, depraved, outrageous.

Wily—cunning, artful, subtle, crafty.

Wisdom—foresight, prudence, knowledge, understanding.

Withdraw—retreat, recede, go back, retire, take back, retrograde.

Withhold—forbear, refrain, refuse, hinder, keep back.

Wonder—astonishment, marvel, surprise, admiration, amazement.

Wonderful—strange, curious, astonishing, surprising, marvelous, admirable.

Worthy—estimable, deserving, meritorious.

Wretched—unhappy, miserable.

Writer—author, scribe.

Y

Yearly—annually.

Yet—but, however, notwithstanding, still, nevertheless.

Yield—comply, conform, concede, allow, produce, permit, resign, surrender.

Z

Zeal—warmth, ardor, fervor, enthusiasm.

Zealous—concerned, earnest, ardent, fervent, anxious, warm, enthusiastic.

Language and Sentiment of Flowers

A DICTIONARY OF THE LANGUAGE OF FLOWERS.

A VERY charming and interesting method of communicating thought is by the aid of flowers, their language and sentiment being understood by the parties who present them. Although the following list is very complete, this vocabulary may be still enlarged by the addition of other definitions, the parties having an understanding as to what language the flower shall represent. Thus an extended and sometimes important correspondence may be carried on by the presentation of bouquets, single flowers and even leaves; the charm of this interchange of thought largely consisting in the romance attendant upon an expression of sentiment in a partially disguised and hidden language.

Of course much of the facility with which a conversation may be conducted, thus, will depend upon the intimate knowledge possessed of the language of flowers and the variety from which to select.

ILLUSTRATIONS.

A declaration of feeling between a lady and gentleman may be expressed by single flowers, as follows:

The gentleman presents a Red Rose—"I love you." The lady admits a partial reciprocation of the sentiment by returning a Purple Pansy—"You occupy my thoughts." The gentleman presses his suit still further by an Everlasting Pea—"Wilt thou go with me?" The lady replies by a Daisy, in which she says—"I will think of it." The gentleman, in his enthusiasm, plucks and presents a Shepherd's Purse—"I offer you my all." The lady, doubtingly, returns a sprig of Laurel—"Words, though sweet, may deceive." The gentleman still affirms his declaration by a sprig of Heliotrope—"I adore you." The lady admits a tenderness of sentiment by the Zinnia—"I mourn your absence."

LANGUAGE OF THE BOUQUET.

A collection of flowers in a bouquet may mean very much. Thus a Rose, Ivy and Myrtle will signify "Beauty, Friendship and Love." A Bachelor's Button "Hope," and a Red Rose "Love," will indicate that "I hope to obtain your love."

I DESIRE TO MARRY YOU

Jonquil—Linden.

I HAVE SWEET MEMORIES IN MY SOLITUDE.

Periwinkle—Heath.

PRAY FOR ME IN MY ABSENCE.

White Verbena—Wormwood.

Thus longer and shorter sentences may be readily expressed by flower-language; and by agreement, if the variety of flowers is not sufficient, a change of definition may be given the more common blossoms and plants, whereby the language and correspondence may be conducted without inconvenience.

Flowers and their Sentiment.

Acacia, Rose	Friendship.
Acanthus	Art.
Adonis, Flos	Painful recollections.
Agnus Castus	Coldness; life without love.
Agrimony	Gratitude.
Almonds	Giddiness; heedlessness.
Aloe	Bitterness.
Amaranth	Immortality; Unfading.
Amaryllis	Beautiful but timid.
Anemone, Garden	Forsaken; Withered hopes; Illness.
Amethyst	Admiration.
Anemone, Windflower	Desertion.
Angelica	Inspiration.
Apple Blossom	Preference.
Arbor Vitæ	Unchanging Friendship.
Arbutus	Thee only do I love.
Ash	Grandeur.
Aspen	Sighing.
Asphodel	Remembered beyond the tomb.
Aster, Double German	Variety.
Aster, Large flowered	Afterthought; Love of variety.
Bachelors' Button	Hope; Single Blessedness.
Balm, Mint	Pleasantry.
Balm of Gilead	Healing; I am cured.
Balsamine	Impatience.
Barberry	Petulance; Ill temper.
Basil	Give me your good wishes.
Bay Leaf	I change but in death.
Beech	Lovers' tryst; Prosperity.
Begonia	Deformed.
Bindweed	Humility; Night.
Birch	Grace; Elegance.
Bittersweet Nightshade	Truth.
Blackthorn, or Sloe	Difficulties.
Bladder Tree	Frivolous amusement
Blue Bell	Constancy.
Blue Bottle	Delicacy.
Borage	Abruptness.
Box	Stoicism.
Briers	Envy.
Broom	Neatness; Humility.
Bryony, Black	Be my support.
Buckbean	Calmness; Repose.
Bugloss	Falsehood.
Bulrush	Docility.
Burdock	Touch me not; Importunity.
Buttercup	Riches; Memories of childhood.
Cabbage	Profit.
Calla	Delicacy; Modesty.
Camillia	Gratitude; Perfect Loveliness.
Camomile	Energy in Adversity.
Candytuft	Indifference; Architecture.
Canterbury Bell	Constancy.
Cardinal Flower	Distinction; Preferment.
Carnation	Pure and deep love.
China Aster	Love of variety.
Cedar Leaf	I live for thee.
Cherry	A good education.
Chestnut	Do me justice.
Cereus, Night Blooming	Transient Beauty.
Chiccory	Frugality; Economy.
Chrysanthemum	A heart left to desolation.
Cinnamon Tree	Forgiveness of injuries.
Cinquefoil	A beloved daughter.
[illegible]	Safety.
Clover, Red	Industry.
Clematis	Mental Beauty; Artifice.
Clover, White	I promise.
Clover, Four Leaved	Be mine.
Cockle	Vain is beauty without merit.
Coltsfoot	Justice shall be done you.
Columbine, Red	Anxious and trembling.
Coreopsis	Always cheerful.
Coriander	Hidden merit.
Corn	Riches; Abundance.
Cornelian, Cherry	Continuance; Duration.
Cowslip	Native grace; Pensiveness.
Coxcomb	Foppery.
Crocus	Cheerfulness.
Cresses	Stability.
Crowfoot	Ingratitude.
Currant	Thy frown will kill me
Crown, Imperial	Power; Pride of birth
Cucumber	Criticism.
Cypress	Despair; Mourning.
Dahlia	Dignity and elegance.
Daffodil	Unrequited love.
Daisy, Garden	I share your feelings.
Daisy, Single Field	I will think of it.
Dandelion	Oracle; Coquetry.
Datura	Deceitful charms.
Dew Plant	Serenade.
Dittany of Crete	Birth.
Dodder	Meanness; Baseness.
Ebony Tree	Blackness.
Eglantine	Poetry; I wound to heal.
Elder	Compassion.
Elecampane	Tears.
Everlasting	Always remembered.
Everlasting Pea	Wilt thou go with me?
Fennel	Force; Strength.
Fern	Sincerity.
Fir	Elevation.
Flax	I feel your benefits.
Flos, Adonis	Painful recollections.
Forget-me-not	Do not forget.
Foxglove	Insincerity; Occupation.
Fraxinella	Fire.
Fuchsia	Taste; Frugality.

Gentian	Intrinsic worth.
Geranium, Ivy	I engage you for the next dance.
Geranium, Oak	A melancholy mind.
Geranium, Rose	I prefer you.
Geranium, Scarlet	Silliness.
Gillyflower, Common	Lasting Beauty.
Gillyflower, Stock	Promptness.
Gladiolus	Ready armed.
Goats' Rue	Reason.
Gold Basket	Tranquility.
Gooseberry	Anticipation.
Grape Vine	Intemperance.
Grass	Utility; Submission.
Greek Valerian	Rupture.
Golden Rod	Encouragement.
Gorse, or Turze	Anger.
Harebell	Retirement; Grief.
Hawthorn	Hope.
Hazel	Reconciliation.
Heath	Solitude.
Heliotrope	I adore you; Devotion
Henbane	Blemish; Fault.
Hibiscus	Delicate beauty.
Hoarhound	Fire.
Holly	Am I forgotten? Foresight.
Hollyhock	Fecundity; Ambition.
Honey Flower	Sweet and secret love.
Honeysuckle	Devoted love; Fidelity
Hop	Injustice.
Hornbean	Ornament.
Horse Chestnut	Luxury.
Houstania	Innocence; Content.
Houseleek	Domestic economy.
Hyacinth	Constancy; Benevolence.
Hydrangea	Vain-glory; Heartlessness.
Ice Plant	Your looks freeze me.
Indian Plum	Privation.
Iris, Common Garden	A message for thee.
Iris, German	Flame.
Ivy	Friendship; Marriage
Jasmine, White	Amiability.
Jasmine, Yellow	Grace and elegance.
Jonquil	Desire; Affection returned.
Jumper	Asylum; Aid; Protection.
Laburnum	Pensive beauty.
Ladyslipper	Capricious beauty.
Larch	Boldness; Audacity.
Larkspur, Pink	Lightness; Fickleness
Laurel, American	Words, though sweet, may deceive.
Lantana	Rigor.
Laurel, Mountain	Glory; Victory; Ambition.
Laurestine	I die if neglected.
Lavatera	Sweet disposition.
Lavender	Mistrust.
Lemon Blossom	Prudence; Discretion.
Lettuce	Cold hearted; Coolness.
Lichen	Dejection.
Lilac, Purple	First emotions of love
Lilac, White	Youth.
Lily, Water	Eloquence.
Lily, White	Majesty; Purity.
Lily of the Valley	Return of happiness.
Linden, or Lime	Conjugal; Marriage.
Liverwort	Confidence.
Locust Tree, Green	Love beyond the grave
Lotus Leaf	Recantation.
Lucern	Life.
Lupine	Dejection.
Madder	Calumny.
Magnolia	Love of Nature.
Maiden Hair	Discretion.
Marjoram	Blushes.
Manchineel Tree	Falseness.
Mandrake	Rarity.
Maple	Reserve.
Marigold	Sacred affection.
Marigold, Garden	Grief; Chagrin.
Marigold, Rainy	A storm.
Marigold and Cypress	Despair.
Marshmallow	Beneficence.
Marvel of Peru	Timidity.
Mayflower	Welcome.
Meadow Saffron	My best days are past
Mezercon	Desire to please.
Mignonette	Your qualities surpass your charms.
Milfoil	War.
Mint	Virtue.
Milkweed	Hope in misery.
Mistletoe	I surmount everything
Mock Orange	Counterfeit, Uncertainty.
Monkshood	Treachery; A foe is near.
Morning Glory	Coquetry; Affection.
Mountain Ash	I watch over you.
Moss	Maternal love.
Mourning Bride	I have lost all.
Mugwort	Good luck; Happiness
Mulberry, Black	I shall not survive you
Mulberry, White	Wisdom.
Mullen	Good nature.
Mushroom	Suspicion.
Musk Plant	Weakness.
Myrtle	Love in Absence.
Myrrh	Gladness.
Narcissus	Egotism; Self-Love.
Nasturtium	Patriotism; Splendor
Nettle	Cruelty.
Nightshade	Dark thoughts; Sorcery.
Oak	Hospitality; Bravery.
Oleander	Beware.
Olive	Peace.
Orange Flower	Chastity.
Orchis, Bee	Error.
Orchis, Spider	Skill.
Osier	Frankness.
Osmunda	Reverie.
Oxalis	Wood sorrel.
Pansy, Purple	You occupy my thoughts.
Parsley	Festivity; Banquet.
Passion Flower	Devotion; Religious fervor.
Peach Blossom	I am your captive.
Peony	Ostentation; Anger.
Persimmons	Bury me amid Nature's beauties.
Peppermint	Warmth of feeling.
Pennyroyal	Flee away.
Periwinkle	Sweet memories.
Phlox	Our hearts are united.
Pimpernel	Rendezvous; Change.
Pine	Endurance; Daring.
Pine Apple	You are perfect.
Pink, Red	Pure love.
Plane, or Platane	Genius.
Plum Tree	Keep your promises.
Plum, Wild	Independence.
Polyanthus	Heart's mystery
Pomegranate	Conceit.
Pompion, or Pumpkin	Grossness; Coarseness
Poplar, Black	Courage.
Poplar, White	Time.
Poppy, Corn	Consolation.
Poppy, White	Sleep; Oblivion.
Potatoe	Benevolence.
Primrose	Modest worth; Silent love.
Privit, or Prim	Prohibition.
Purple Scabious	Mourning.
Queen of the Meadow	Uselessness.
Quince	Temptation.
Ranunculus, Garden	You are radiant with charms.
Reeds	Music.
Rest Harrow	Obstacle.
Rhododendron	Agitation.
Rhubarb	Advice.
Rosebud	Confession of love.
Rosebud, White	Too young to love.
Rose, Cinnamon	Without pretension.
Rose, Hundred leaved	The graces.
Rose, Austrian	Thou art all that is lovely.
Rose Leaf	I never trouble.
Rose, Monthly	Beauty ever new.
Rose, Moss	Superior merit; Voluptuousness.
Rose, Musk	Capricious beauty.
Rose, Red	I love you.
Rose, White	Silence.
Rose, Wild, Single	[illegible]
Rose, Yellow	Infidelity; Unfaithfulness.
Rosemary	Remembrance; Your presence revives me
Rue	Disdain.
Rush	Docility.
Saffron, Meadow	My best days are past.
Saffron, Crocus	Do not abuse.
Sage	Domestic Virtue; Esteem.
St. John's Wort	Animosity.
Sardonia	Irony.
Satin Flower	Forgetfulness.
Scratch Weed	Roughness.
Scotch Thistle	Retaliation.
Sensitive Plant	Sensitiveness; Modesty.
Serpent Cactus	Horror.
Service Tree, or Sorb	Prudence.
Shepherd's Purse	I offer you my all.
Silver Weed	Naiveté.
Snapdragon	Presumption.
Snowball	Goodness; Thoughts of Heaven.
Snowdrop	Consolation; A friend in adversity.
Sorrel	Parental Affection.
Speedwell	Fidelity.
Spindle Tree	Your charms are graven on my heart.
Star of Bethlehem	Reconciliation; Purity.
Straw, Broken	Quarrel.
Straw	Agreement; United.
Strawberry	Perfect excellence.
Sumach	Splendid misery.
Sunflower, Tall	Lofty and wise thoughts.
Sunflower	False riches.
Sunflower, Dwarf	Adoration.
Sweet Flag	Fitness.
Sweet Pea	A meeting.
Sweet Sultan	Happiness.
Sweet William	Gallantry; Finesse; Dexterity.
Syringa	Memory; Fraternal love.
Sycamore	Curiosity.
Tare	Vice.
Teasel	Misanthropy.
Thistle	Austerity.
Thorn Apple	Disguise.
Thrift	Sympathy.
Thyme	Activity.
Tremella	Resistance.
Tube Rose	Dangerous Pleasure, Voluptuousness; Sweet voice.
Tulip, Variegated	Beautiful eyes.
Tulip, Red	Declaration of love.
Valerian, Common	Accommodating disposition.
Valerian	Facility.
Venus's Looking Glass	Flattery.
Verbena	Sensibility; Sensitiveness.
Verbena, Purple	I weep for you; Regret.
Verbena, White	Pray for me.
Vervain	Enchantment.
Vernal Grass	Poor, but happy.
Vetch	I cling to thee.
Violet, Blue	Faithfulness.
Violet, White	Purity; Candor; Modesty.
Volkamenia	May you be happy.
Wall Flower	Fidelity in misfortune.
Weeping Willow	Melancholy.
Wheat	Wealth.
Whortleberry	Treachery.
Willow, Common	Forsaken.
Willow Herb	Pretension.
Wood Sorrel	Joy.
Woodbine	Fraternal love.
Wormwood	Absence.
Yarrow	Cure for the heartache.
Yew	Sadness.
Zinnia	I mourn your absence

VOCABULARY OF "GIVEN" NAMES, FOR REFERENCE.

Names of Men, Alphabetically Arranged.

Aaron.
Abel.
Abiel.
Abijah.
Abner.
Abraham.
Abram.
Adam.
Addison.
Adelbert.
Adolphus.
Adoniram.
Alanson.
Alaric.
Albert.
Alexander.
Alexis.
Alfred.
Allan.
Alonzo.
Alpheus.
Alphonso.
Alvah.
Alvan.
Alvin.
Alwin.
Amariah.
Amasa.
Ambrose.
Ammi.
Amos.
Andrew.
Anselm.
Anson.
Anthony.
Antony.
Archibald.
Artemas.
Arthur.
Asa.
Asahel.
Asaph.
Asher.
Ashur.
Augustin.
Augustine.
Austin.
Augustus.
Azariah.

Barnabas.
Barnard.
Bartholomew.
Barton.
Basil.
Benjamin.
Beriah.
Bernard.
Bertram.
Bertrand.
Boniface.
Burnell.
Burton.
Byron.

Cadwallader.
Cæsar.
Caleb.
Calvin.
Casimir.
Cass.
Cassimer.
Cecil.
Chauncey.
Charles.
Christian.
Christopher.
Claudius.
Clarence.
Clark.
Claude.
Clement.
Columbus.
Conrad.
Constant.
Constantine.
Cornelius.
Cuthbert.
Cyprian.
Cyril.
Cyrus.

Dale.
Dan.
Dana.
Danforth.
Daniel.
Darius.
David.
Delos.
Delwin.
Demetrius.
Denis.
Dennis.
Derrick.
Dionysius.
Donald.

Earl.
Eben.
Ebenezer.
Edgar.
Edmund.
Edward.
Edwin.
Egbert.
Elbert.
Elbridge.
Eldred.
Eleazer.
Eli.
Eliab.
Elias.
Elihu.
Elijah.
Eliphalet.
Elisha.
Elizur.
Ellis.
Ellsworth.
Elmer.
Elmore.
Elnathan.
Emanuel.
Emery.
Emilius.
Emmerson.
Emmery.
Emory.
Enoch.
Enos.
Ephraim.
Erasmus.
Erastus.
Eric.
Ernest.
Erving.
Ethan.
Eugene.
Eustace.
Evan.
Everett.
Ezekiel.
Ezra.

Felix.
Ferdinand.
Fernando.
Festus.
Fletcher.
Forrest.
Francis.
Frank.
Franklin.
Frederic.
Frederick.

Gabriel.
Gail.
Gaius.
Gamaliel.
Gardner.
Garret.
George.
Gerald.
Gerard.
Gershom.
Gideon.
Gilbert.
Giles.
Given.
Goddard.
Godfrey.
Gregory.
Griffith.
Gustavus.
Guy.

Haman.
Hanford.
Hannibal.
Harold.
Harrie.
Harrison.
Heman.
Henry.
Herbert.
Herman.
Hezekiah.
Hiram.
Homer.
Horace.
Horatio.
Hosea.
Howard.
Howe.
Howell.
Hubert.
Hugh.
Hugo.
Humphrey.

Ichabod.
Immanuel.
Ingram.
Inigo.
Ira.
Irving.
Irwin.
Isaac.
Isador.
Isaiah.
Israel.
Ivan.

Jabez.
Jacob.
Jairus.
James.
Japeth.
Jared.
Jason.
Jasper.
Jay.
Jean.
Jedediah.
Jefferson.
Jeffrey.
Jeremiah.
Jeremy.
Jerome.
Jesse.
Jethro.
Job.
Joel.
John.
Jonah.
Jonas.
Jonathan.
Joseph.
Josephus.
Joshua.
Josiah.
Josias.
Jotham.
Joy.
Judah.
Julian.
Julius.
Justin.
Justus.

Kenneth.
King.
Kinnie.

Laban.
Lambert.
Langdon.
Laurence.
Lawrence.
Lafayette.
Lazarus.
Legrand.
Leander.
Lemuel.
Leo.
Leon.
Leonard.
Leonidas.
Leopold.
Leroy.
Levi.
Lewis.
Lincoln.
Linus.
Lionel.
Llewelyn.
Loami.
Lorenzo.
Lot.
Louis.
Lucian.
Lucius.
Ludovic.
Ludwig.
Luke.
Luther.
Lycurgus.
Lyman.
Lysander.

Madoc.
Madison.
Mahlon.
Manasseh.
Mansfield.
Marcellus.
Marcius.
Marcus.
Mark.
Marmaduke.
Martin.
Marvin.
Matthew.
Matthias.
Maurice.
Melvin.
Merton.
Merwin.
Maximilian.
Micah.
Michael.
Miles.
Milton.
Morgan.
Morris.
Moses.

Nahum.
Nathan.
Nathaniel.
Neal.
Neil.
Nehemiah.
Newton.
Nicolas.
Niles.
Noah.
Noel.
Norman.
Norton.

Obadiah.
Obed.
Octavius.
Octavus.
Oley.
Oliver.
Ona.
Orestes.
Orlando.
Orrion.
Oscar.
Osmond.
Oswald.
Othello.
Otto.
Owen.

Patrick.
Paul.
Peleg.
Peregrine.
Peter.
Philander.
Philemon.
Philip.
Philo.
Phineas.
Pius.
Pluto.
Pompey
Pontus.

Queen.
Quincy.
Quintin.

Ralph.
Ransom.
Raphael.
Ray.
Raymond.
Reuben.
Reuel.
Reynold.
Richard.
Robert.
Roderic.
Roderick.
Rodman.
Rodolph.
Rodolphus.
Roger.
Roland.
Rollo.
Romeo.
Roswell.
Rowland.
Royal.
Rudolph.
Rudolphus.
Rufus.
Rupert.

Salem.
Salmon.
Samson.
Sampson.
Samuel.
Saul.
Seba.
Sebastian.
Sem.
Sereno.
Serenus.
Seth.
Shelden.
Sherman.
Sigismund.
Silas.
Silvanus.
Silvester.
Simeon.
Simon.
Solomon.
Solon.
Stephen.
Steven.
Sylvan.
Sylvanus.
Sylvester.

Tamer.
Taylor.
Thaddus.
Theobald.
Theodore.
Theodoric.
Theophilus.
Theron.
Thomas.
Thompson.
Timothy.
Titus.
Tobias.
Tristram.

Ulysses.
Umphrey.
Uranus.
Urban.
Uriah.
Urian.
Uriel.

Valentine.
Vard.
Vardemond.
Vernet.
Veronus.
Victor.
Vincent.
Virgil.
Vivian.

Wade.
Walter.
Washington.
William.
Willis.
Winfield.
Winfred.
Winton.

Zabdiel.
Zaccheus.
Zachary.
Zadok.
Zabadiah.
Zachariah.
Zedekiah.
Zelotes.
Zenas.
Zenia.
Zeno.
Zenos.
Zephaniah.
Zeri.
Zerus.

Names of Women, Alphabetically Arranged.

Abigail.
Achsa.
Ada.
Adaline.
Addie.
Adela.
Adelaide.
Adelia.
Adelina.
Adeline.
Adoline.
Adora.
Agatha.
Agnes.
Alethea.
Alexandra.
Alexandrina.
Alice.
Alicia.
Almeda.
Almira.
Althea.
Alvaretta.
Alzina.
Amabel.
Amanda.
Amarilla.
Amelia.
Amy.
Angelica.
Angelina.
Angeline.
Ann.
Anna.
Annabel.
Annie.
Annette.
Antoinette.
Antonia.
Antonina.
Arabella.
Ardelia.
Ariana.
Aseneth.
Athena.
Augusta.
Aurelia.
Aurora.
Azalia.

Barbara.
Beatrice.
Beatrix.
Belinda.
Belle.
Bertha.
Bessie.
Betsey.
Beulah.
Blanch.
Blanche.
Bridget.

Camilla.
Capitola.
Caroline.
Carrie.
Cassandra.
Cassie.
Catharina.
Catharine.
Catherine.
Cecilia.
Cecily.
Cedelia.
Celeste.
Celestine.
Celia.
Charity.
Charlotte.
Chloe.
Christina.
Cicely.
Clara.
Clarice.
Clarissa.
Claudia.
Clementina.
Clementine.
Cleopatra.
Constance.
Cora.
Cordelia.
Corinna.
Cornelia.
Cynthia.

Darina.
Deborah.
Dele.
Delia.
Della.
Diana.
Dinah.
Dora.
Dorcas.
Dorinda.
Dorothy.
Doxie.

Edessa.
Edith.
Edna.
Effie.
Eleanor.
Electa.
Electra.
Elida.
Elinor.
Elisabeth.
Elizabeth.
Eliza.
Ella.
Ellen.
Ellie.
Eloise.
Elsie.
Elvira.
Eme.
Emeline.
Emily.
Emma.
Emmerett.
Eola.
Ercilia.
Ernestine.
Esmerelda.
Esther.
Estusia.
Etta.
Ettie.
Ethel.
Ethelind.
Ethelinda.
Eudora.
Eudosia.
Eugenia.
Eugenie.
Eunice.
Euphemia.
Eva.
Evangeline.
Eve.
Evelina.

Fama.
Fanny.
Fara.
Fatima.
Faustina.
Felicia.
Fidelia.
Flora.
Floralia.
Florena.
Florence.
Florenia.
Frances.
Francelia.
Fredrica.

Gabriella.
Genet.
Geneva.
Genevieve.
Genieve.
Georgiana.
Geraldine.
Gertie.
Gertrude.

Hagar.
Hattie.
Hannah.
Harriet.
Harriot.
Hebe.
Helen.
Helena.
Henrietta.
Hessa.
Hester.
Hesther.
Hilda.
Honora.
Honoria.
Hortensia.
Huldah.

Ida.
Imogene.
Inez.
Ionia.
Irene.
Isabel.
Isabella.
Isadora.

Jane.
Janet.
Jean.
Jeanne.
Jeannette.
Jemima.
Jennie.
Jenny.
Jerusha.
Jessie.
Joan.
Joanna.
Josepha.
Josephine
Joyce.
Judith.
Julia.
Julianna.
Juliet.
Julietta
Junietta.

Katharine.
Katherine.
Katie.
Katrina.
Keziah.
Kittie.

Larelda.
Laura.
Lauriet.
Laurietta.
Laurinda.
Lavinia.
Lena.
Leonora.
Letitia.
Lettice
Lexie.
Libbie.
Lillian.
Lillie.
Lilly.
Lois.
Lorana.
Lou.
Louisa.
Louise.
Lucia.
Lucinda.
Lucretia.
Lucy.
Lulu.
Lurelia.
Lurella.
Lureno.
Lurietta.
Lydia.

Mabel.
Madeline.
Maggie.
Mahala.
Malvina.
Marcella.
Marcia.
Margaret.
Maria
Marie.
Marianne.
Marietta.
Marilla.
Marion.
Martha.
Mary.
Mathilda.
Matilda.
Maud.
May.
Meggie.
Mehetabel.
Mehitable.
Melicent.
Melissa.
Meta.
Metta.
Mildred
Minnie.
Miranda.
Miriam
Morella.
Myra.

Nancy.
Nannie.
Nanza.
Naomi.
Nellie.
Nettie.
Nina.
Nora.

Octavia.
Olive.
Olivia.
Ophelia.
Olympia.
Ora.
Orianna.
Oriel.
Orletta.
Othalia.
Orlinda.

Pansy.
Paulina.
Pauline.
Penelope.
Pera.
Perebel.
Perrine.
Pettie.
Phebe.
Philip.
Phœbe.
Phyllis.
Pina.
Polly.
Porcia.
Priscilla.

Rachel.
Rebecca.
Rebekah.
Rena.
Revella.
Rhoda.
Rosa.
Rosabel.
Rosalia.
Rosalie.
Rosalind.
Rosamond.
Rose.
Rosella.
Rosetta.
Roxana.
Roxie.
Ruth.

Salome.
Samantha.
Samima.
Sara.
Sarah.
Sarepta.
Selina.
Serena.
Sibyl.
Sibylla.
Sonora.
Sophia.
Sophronia.
Stella.
Surelia.
Susan.
Susanna.
Susannah.
Sylvia.

Tabitha.
Terine
Theodora.
Theodosia.
Theresa.
Thomasine.
Tilda.
Tillie.
Tina.
Tryphena.

Ulrica.
Ureneo
Uretta.
Urexie.
Ursula.
Uvenia.

Valeria.
Valina.
Victoria.
Victorine.
Viletta
Viola.
Violet.
Vlorene.
Virginia.
Vivian.

Welthy.
Wilhelmina
Winete.
Winnie.

Zella.
Zelia.
Zenobia

Attractive Personal Appearance.

ELEMENTS OF THE BEAUTIFUL.

THE love of beautiful adornment is innate in the human mind, and in reality has a great influence in elevating and refining the race. It is true that the mind may sometimes be too much given to personal decoration, but the instincts which cause us to clothe ourselves beautifully are all refining and elevating in character.

The desire to please and to be beautiful surrounds us on every hand with grace, elegance and refinement.

The person who cares nothing for personal appearance is a sloven. Were all to be thus, the human race would rapidly degenerate toward barbarism. The person who is careless of dress is likely to be equally regardless concerning purity of character.

The little girl that studies her features in the mirror, while she evinces possibly a disposition to be vain, nevertheless in this act shows herself to be possessed of those instincts of grace which, rightly directed, will beautify and embellish all her surroundings through life.

The boy that cares nothing for personal appearance, that does not appreciate beauty in others, is likely to develop into the man who will be slovenly in habits, whose home will quite probably be a hovel, and himself very likely a loafer or a tramp. But the boy—the rolicsome, frolicsome boy, ready to roll in the dirt, possibly—who, under all this, aspires to appear handsome, who desires a clean face, clean hands and a clean shirt, who admires a well-dressed head of hair and a good suit of clothes—that boy possesses the elements which in the man, in an elegant home, will surround him with the artistic and the charming.

The love of the beautiful ever leads to the higher, the grander and the better. Guided by its impulses, we pass out of the hut into the larger and better house; into the charming and elegantly-adorned mansion. Actuated by its influence, we convert the lumbering railway carriage into a palace-car, the swamp into a garden, and the desolate place into a park, in which we wander amid the trees, the streams of limpid water, and the fragrance of beautiful flowers.

All along the world's highway are the evidences, among the most elevated and refined, of the love of the beautiful, which, perhaps more than in any other manner, finds expression in dress.

This love of personal adornment being an inherent, desirable, refining element of character, it does not, therefore, become us to ignore or to suppress it. On the contrary, it should be our duty to cultivate neatness of appearance and artistic arrangement in dress, the whole being accompanied by as much personal beauty as possible.

In the cultivation of beauty in dress, it will become necessary to discriminate between ornament as displayed by the savage, and the science of beauty as observed in a more highly civilized life. Ornament is one thing; beauty is quite another.

To develop beauty, it is necessary to understand that the combination of a few fundamental principles forms the basis in the construction of all that we admire as beautiful. Of these are—

1. CURVED LINES. 2. SYMMETRY. 3. CONTRAST. 4. HARMONY OF COLOR. 5. HARMONY OF ASSOCIATION.

The Curved Line.

A prominent feature of beauty everywhere is the curved line. The winding pathway, the graceful outline of tree, cloud and mountain in the distance, the arched rainbow, the well-trimmed shrub, the finely-featured animal, the rounded form of everything that is beautiful—all illustrate this principle. The delicately, finely rounded face, hands and general features, are essential to the highest forms of beauty in the person, and the same principles apply in the manufacture of dress. Every line and seam should run in curves.

Symmetry of Proportion.

As harmonious proportions always please the eye in every object, so we are pleased with the symmetry displayed in the human form and features. Thus symmetry will give a well-shaped head, a moderate length of neck, a clearly-defined nose, mouth not too large, shoulders of even height, and all parts of the body of proportionate length and size. The clothing should be made to set off the natural features of the body to the best advantage. Thus the coat should be so cut as to make the shoulders of the man look broad. The dress should be so fitted as to cause the shoulders of the woman to appear narrow and sloping.

Long garments will make the individual appear taller. Short garments will cause the person to seem shorter. Lines that run perpendicularly add to the apparent height; horizontal lines shorten it.

Contrast.

Another feature of beauty in personal appearance is contrast, or those qualities which give animated expression and vivacity of manner. Thus the sparkling eye, clear-cut features, a color of hair that contrasts with the skin; happy, lively expression of face; graceful, animated movement of body; interesting conversational powers—all these make the face attractive by variety and contrast.

The lady's dress is relieved by flounce, frill, and various other trimmings, with colors more or less pronounced, according to the complexion of the wearer. The gentleman's dress, as now worn, does not admit of so great variety.

Harmony.

The harmony of colors suitable for various complexions is quite fully detailed elsewhere. Harmony of association will include those principles that derive their beauty chiefly from their association with other objects. Thus the best height and form for man or woman will be the average form of men and women with whom they associate. Anything unusual will detract from this beauty.

Any article of jewelry or dress which may appear out of place for the occasion, or not appropriate with the other articles worn, is also included under this head.

The TOILET

SUGGESTIONS RELATING TO
THE
SELECTION OF HARMONIOUS COLORS
IN
PERSONAL ADORNMENT
WITH
Hints on the Care of the Person.

Colors that Befit the Blonde and Colors for the Brunette.

VERY SAFE is it to assume that the reader desires health and beauty, and is willing perhaps to govern habits accordingly. Observe then the following regulations:

Retire sufficiently early to get the necessary rest and sleep, that you may arise early in the morning.

Be sure that plenty of fresh air is admitted to the room throughout the night, by the opening of windows. Avoid feathers. A perfectly clean, moderately hard bed is best for health.

The Bath.

Upon rising, take a complete bath. A simple washing out of the eyes is not sufficient. The complete bathing of the body once each day is of the utmost importance to health and beauty. Not more than a quart of water is necessary. Use the hands the same as you do upon the face. No sponge is required, and water is more agreeable to the skin when applied with the bare hand. Use rainwater; and, for a healthy person, the temperature of that which has been in the room during the night is about right. Use plenty of soap, and wash quickly. Follow by wiping the skin perfectly dry with a soft towel, and afterward give the body and limbs a thorough rubbing. The glow that is diffused throughout the face and body by this exercise is worth more in giving a ruddy, beautiful complexion than all the rouge and powder in the world.

The arrangements for this bath are very simple. There is nothing required but a small amount of soft water, a piece of soap, and a towel. No elaborately-fitted-up bathroom is necessary. We have detailed all the appliances that are essential, and they are so simple that the laboring classes and the poor can have them, and be clean, as well as the rich. Occasionally, warm water, with a sponge, may be necessary to remove completely all the oily exudations from the body, but for the ordinary bath this is not essential.

The sun and air bath is very excellent for health; therefore to leave the body exposed in the sun for a short time previous to dressing is very invigorating.

Before the breakfast hour the lungs should be completely inflated with fresh air. The meals should be partaken of with regularity, while more or less of fruit, oatmeal, rice, cracked wheat, graham bread, etc., will be found necessary as a diet, in order to keep the skin clear

The Breath.

The breath should be watched, lest it become offensive. Unfortunately, it is one of the troubles which we may not be aware of, as our friends may not feel at liberty to inform us of the difficulty. Offensive breath may arise from the stomach, the teeth, the lungs, or catarrhal affection of the throat and nose.

Unquestionably the best remedy for bad breath is a system of diet and treatment that shall remove the cause. As a temporary expedient, when offensiveness arises from a peculiar food or drink which has been partaken of, a few grains of coffee, or cassia buds, cloves, cardamom seeds or allspice, may be used; although if the breath is very strong these will not always prove effective. It is better to remove the cause.

The following remedies for offensive breath are commended by those who have had experience in testing the matter:

Powdered sugar, ½ ounce; vanilla, ½ ounce; powdered charcoal, ½ ounce; powdered coffee, 1½ ounces; gum arabic, ½ ounce. Make into pellets of 18 grains each, and take six a day. Bad breath will disappear.

Disagreeable breath arising from decay or secretions about the teeth may be removed by the following:

Rose-water, 1 ounce, and permanganate of potash, 1 grain. Rinse the mouth every three hours.

To remove catarrh, the following is highly commended:

In pint of water put two tablespoonfuls of common fine table salt. Heat the water in a tin cup. With the aid of a nasal douche, obtained at the drug-store, or even without that, snuff about a teaspoonful of the brine up each nostril, requiring it to pass into the mouth. Use twice a day—morning and night.

For offensive breath arising from foul stomach, the following is recommended:

To a wine-glass of water add 3 grains of chloride of lime. Take a tablespoonful three times a day, before the meal, and eat of simple food which is easily digested.

Another remedy for foul breath is powdered charcoal, half a teaspoonful, spread on a piece of bread, and eaten once a day for two or three days. Another is a drink of pure water, taken twice a day, containing each time 20 grains of bisulphate of soda. The taste is made pleasant by a few drops of peppermint essence.

The following is recommended as beneficial for the teeth, and effective in removing the acidity of the stomach:

Take of gum arabic 5 drachms; vanilla sugar, 3 drachms; chlorate of lime, 7 drachms, and mix with water to a stiff paste. Roll and cut into the ordinary sized lozenge, and eat six each day.

The Skin.

Beware of exterior application of cosmetics for the purpose of beautifying the skin. The greatest beautifiers in existence are plenty of exercise in the fresh air, the keeping of the pores of the skin completely open by bathing, the feeding of the body with a sufficiency of simple, healthy food, and the obtaining of the requisite amount of sleep.

The Hair.

It is doubtful if a hair-dye is ever advisable, though an eyebrow is sometimes improved by a light application, to bring it into harmonious color with the hair, as is also hair which grows white in patches. There is no objection to the hair growing gray. Indeed the gray is often fully as beautiful as the former color.

Baldness is usually avoided by keeping the head cool. Women seldom have bald heads, but men often do, the baldness commencing upon the head at a point which is covered by the hat. In order to preserve the hair, gentlemen must avoid warm hats and caps, and whatever is worn must be thoroughly ventilated by apertures sufficient in quantity and size to allow all the heated air to escape. The silk hat should have at least twenty holes punched in the top to afford sufficient ventilation.

The beard is nature's badge to indicate manhood. It was an unwise fashion that ordained that the face should be shaved. Gradually men begin to learn that health, comfort and improved appearance come with the full beard, and in later years the beard is acquiring the prestige it held in olden times. Care should be taken to keep the beard and hair so cut and trimmed that they may present a handsome appearance.

The Teeth.

The teeth should be thoroughly cleaned with a toothbrush each morning after breakfast. Some persons clean the teeth after every meal, which is a most excellent habit. By cleaning the teeth regularly, no washes are necessary, though occasionally castile soap will be beneficial. Should tartar collect in such quantity as to be difficult to remove the dentist should be consulted. Should the teeth begin to decay they should be immediately cared for by the dentist. Powdered charcoal easily removes stains and makes the teeth white.

The following also is an excellent wash for the teeth:

Tincture of myrrh, 1 ounce; compound tincture of cinchona, 1 ounce; water, 1 ounce. Put five drops on the toothbrush, dip the brush then in water, and wash the teeth.

Keep the teeth clean. They look badly if not perfectly white and clean.

Ears, Eyes and Nose.

In the daily bath all the crevices of the ear should be thoroughly cleaned, and the earwax carefully removed whenever it shows itself.

Special pains should be taken to keep the eyes clean. It shows filthy habits to see matter gathering in the corners. If dirt accumulates between washings, the eyes should be carefully wiped with a soft handkerchief

Keep the nasal passages perfectly clear. If there is an inclination for accumulations to stop there, snuff water up the nose, and afterward blow it, placing the thumb on one side while you blow the other. Keep the nose so clear that you can breathe through it with ease, and avoid the coarse habit of picking it.

Regularity of Habits.

It is of the utmost importance, if the individual would enjoy health and possess beauty, that all the personal habits be perfectly regular, and that attention be given to these each twenty-four hours at a regular time.

Do not let visiting, traveling or business interfere with them. You must be regular in sleep, in evacuation of the bowels, in bathing and in eating. Nature will not be cheated. She requires perfect attention to certain duties. If you attempt to violate her requirements you will be certainly punished.

Whenever the person complains of sickness he confesses to a violation, consciously or unconsciously, unavoidably or otherwise, of some of nature's requirements. (See remarks on "Health," in the "Letters of Advice," elsewhere in this volume.)

WHAT COLORS MAY BE WORN.

Nature has her peculiar shades and contrasts, with which she embellishes all her works.

Over the retreating dark gray cloud in the east does the rainbow show itself, strong by contrast, and beautiful in the harmony of its surroundings. Surpassingly lovely are the brilliant rays of the golden sunset, as they lie reflected upon the fleecy clouds at eventide, their charm coming from their surroundings of the gray and azure blue. Dazzlingly bright are the twinkling stars as they smile upon us in their bed of celestial blue; and very beautiful is the rose, as it perfumes the air and charms the eye amid its accompaniments of green.

Nature thus robes all her works with shades that complement and harmonize; the result being to show the object to the best advantage.

In the higher civilization men have donned the conventional suit of black and have abandoned the domain of color to woman, who, with her keenly æsthetic nature can never be induced to forego the pleasure that comes from brilliant and harmonious hues. Alive as woman is, therefore, to the principles that make beauty, it becomes us to investigate the subject of personal appearance as affected by color.

Colors that Suit Different Complexions.

Two distinct types of complexion exist among the white race, namely, the light-haired, fair and ruddy complexions, termed Blondes; and the dark-haired and dark-skinned, called Brunettes.

Between these are several intermediate tints and shades, all requiring much close observation to fully discriminate as to the colors most suitable to be worn to harmonize with the different shades of complexion.

Investigation has proven that the light-haired and rosy-cheeked, with red or golden hair and ruddy complexion, require certain colors in headdress and drapery to harmonize; and the same is true of the dark complexion, with dark hair and eyebrows.

The Shades that Blondes May Wear.

Dark violet, intermixed with lilac and blue, give additional charms to the fair-haired, ruddy blonde. Green, also, with lighter or darker tints, is favorable. With the very ruddy, the blue and green should be darker rather than lighter. An intermixture of white may likewise go with these colors.

The neutral colors are also suitable to the ruddy blondes. Of these are the russet, slate, maroon, and all the hues of brown. Light neutral tints are also pleasing, such as gray, drab, fawn and stone colors.

Transparent and delicate complexions, with light, chestnut or brown hair, should have the same set off by contrast. Thus blue, pale yellow, azure, lilac and black, trimmed with rose or pink, are suitable, as are also the various shades of gray.

Colors that Become the Brunette.

Glossy black becomes the brunette; so do white, scarlet, orange and yellow. The scarlet blossom in the hair, gold-colored ribbon and poppy colors, deftly but not too conspicuously woven about the neck and breast, will display the face to fine advantage. Green also befits the dark complexion

The sallow complexion is improved by the different shades of dark-green and red. A yellow complexion is made handsomer by the reflection of yellow about it; especially if relieved by poppy colors or black.

The red and yellow face is benefited by coming in contact with blue or orange. The red face is improved by red around it, red and blue tints being developed thereby. Red and blue are relieved by purple, and the blue and yellow by green. White and black become the pale face, but red and blue become it better. Light colors harmonize with and befit the pale skin, while the dark skin is improved by the darker tints.

Colors in Bonnets.

Black Bonnets, with white, pink or red flowers and white feather, become the fair complexion. They also become the black-haired type when trimmed with white, red, orange or yellow.

White Bonnets, made of lace, muslin or crape, suit all complexions, though not so becoming to the rosy complexion as other colors. A white bonnet may be trimmed with white or pink, but with the blonde is handsomest when trimmed with blue flowers. For the brunette, preference should be given to trimmings of red, pink, orange and yellow—never blue.

Blue Bonnets are suitable only for fair or light, rosy complexions. They should never be worn by the brunette.

Yellow and Orange Bonnets suit the brunette, their appropriate trimming being poppy colors, scarlet, white and black, black and scarlet, black, scarlet and yellow.

Light Blue Bonnets are very suitable for those having light hair. They may be trimmed with white flowers, and in many cases with orange and yellow.

Green Bonnets best become the fair and rosy complexion. White flowers will harmonize in the trimming, but pink is preferable.

Colors for Different Seasons.

Red, in its various tints, being a warm color, when worn in dress, has a pleasing effect in winter.

Purple is appropriate in winter, spring and autumn.

Green is becoming in late summer and in autumn, by contrast with the general somber appearance of dead foliage at that season of the year.

White and light tints in clothing give an appearance of coolness and comfort in summer.

Black and dark colors are appropriate at all seasons.

An Introduction.

Colors We See First.

Of a variety or color to be seen, the white or light-colored will usually attract attention first and farthest, from the fact that, most objects being of dark shades of color, it is strongest by contrast. Next to white comes the scarlet red, which, close by, is one of the most brilliant and attractive colors. Yellow is one of the most noticeable, succeeded by the orange, crimson, blue and purple.

Colors in Dress Most Beautiful at Night.

A dress of a color that may be beautiful during the day may be lacking in beauty at night, owing to the effect of gaslight; and another, most charming in the evening, may possess little beauty in the daytime. Thus, crimson, which is handsome in the evening, loses its effect upon the complexion in the daytime. So white and yellow, that add beauty at night, are unbecoming by day.

The scarlet, orange and the light brown are also most charming at night.

Colors Most Beautiful by Daylight.

Pale yellow, which is handsome by day, is muddy in appearance by gaslight. So purple and orange, that harmonize and are beautiful by daylight, lose their charm at night.

The beauty of rose-color disappears under the gaslight; and all the shades of purple and lilac, the dark-blues and green, lose their brilliancy in artificial light. Ordinarily, the complexion will bear the strongest color at night.

Apparent Size Affected by Color.

The apparent size is affected by colors. As white upon the building will make it appear larger, so a light-colored dress will have the same effect upon the person. Thus the large figure will appear best in close-fitting black, and next best in the sober hues. The smaller figure will show to advantage in the light colors. Black, however, for a person of any size, is the most suitable color for nearly all occasions; and, handsomely made, well-fitted, artistically trimmed, and suitably relieved at throat and bodice with ribbons, lace and flowers corresponding with the complexion, makes always a most beautiful costume.

Persons whose resources are limited and who cannot afford a varied wardrobe should by this fact be guided to a constant preference for black.

Colors that Harmonize.

The object of two or more different tints in dress is to obtain relief by variety, and yet the two shades brought thus in contrast should harmonize, else the beauty of each will be lessened. Thus, a lady with a blue dress would greatly injure its effect by wearing a crimson shawl; as she would also a lilac-colored dress by trimming it with a dark-brown material, no matter how rich.

That the reader may understand the colors that will contrast and yet blend, the following list of harmonizing colors is given:

Blue and gold; blue and orange; blue and salmon-color; blue and drab; blue and stone-color; blue and white; blue and gray; blue and straw-color; blue and maize; blue and chestnut; blue and brown; blue and black; blue and white; blue, brown, crimson and gold.

Black and white; black and orange; black and maize; black and scarlet; black and lilac; black and pink; black and slate-color; black and buff; black, white, yellow and crimson; black, orange, blue and yellow.

Crimson and gold; crimson and orange; crimson and maize; crimson and purple; crimson and black; crimson and drab.

Green and gold; green and yellow; green and orange; green and crimson; green, crimson and yellow; green, scarlet and yellow.

Lilac and gold; lilac and maize; lilac and cherry; lilac and scarlet; lilac and crimson; lilac, scarlet, white and black; lilac, gold and chestnut; lilac, yellow, scarlet and white.

Orange and chestnut; orange and brown; orange, lilac and crimson;

orange, red and green; orange, blue and crimson; orange, purple and scarlet; orange, blue, scarlet, green and white.

Purple and gold; purple and orange; purple and maize; purple, scarlet and gold-color; purple, white and scarlet; purple, orange, blue and scarlet; purple, scarlet, blue, yellow and black.

Red and gold; red, white or gray; red, green and orange; red, black and yellow; red, yellow, black and white.

Scarlet and purple; scarlet and orange; scarlet and blue; scarlet and slate-color; scarlet, black and white; scarlet, white and blue; scarlet, gray and blue; scarlet, yellow and blue; scarlet, blue, yellow and black.

Yellow and red; yellow and brown; yellow and chestnut; yellow and violet; yellow and blue; yellow and crimson; yellow and purple; yellow and black; yellow, purple and crimson; yellow and scarlet.

FASHION---WHY DOES IT CHANGE?

Because change is one of nature's laws. If there was no change there would be no motion; and without motion there would be no life.

Change is ever going forward in nature. To-day it is spring and all nature is waking to new life. A few weeks hence and every tree and shrub will be clothed in a garb of green, sprinkled with blossoms. Later the green of various shades will merge into the autumn tints; and, later still, nature will doff her garb entirely, only to clothe herself in the coming years again with various changes, according to the seasons.

So mankind instinctively change in style of costume, oftentimes for better, and sometimes, it must be admitted, for the worse. But the change ever goes forward, fashion repeating itself within the century, often within a generation, almost as certain as the seasons do within the year.

There is no use, therefore, in issuing a fiat against changes of fashion. Best judgment is shown in accepting of the inevitable and adapting ourselves to circumstances.

Tea and Chat.

Hints to Gentlemen.

It is best to conform to fashion, avoiding extremes.

While it is well to guard against the adoption of a decidedly unwise fashion, it is well also to avoid an oddity in dress.

Well-dressed gentlemen wear dark clothing cut and made to measure. Watch-chain, one ring, shirt-stud and sleeve-buttons, are all the jewelry allowable for the gentleman.

Other colors than black will be appropriate in their season and for various kinds of enjoyment.

Hints to Parents.

Give the boy a good suit of clothes if you wish him to appear manly. An ill-fitting, bad-looking garment destroys a boy's respect for himself.

To require the boy to wear men's cast-off clothing, and go shambling around in a large pair of boots, and then expect him to have good manners, is like giving him the poorest of tools, because he is a boy, and then compelling him to do as fine work with them as a man would with good tools.

Like the man or woman, the boy respects himself, and will do much more honor to his parents, when he is well dressed in a neatly fitting suit of clothes. Even his mother should relinquish her rights and let the barber cut his hair.

As a rule well-dressed children exhibit better conduct than children that are careless in general appearance. While vanity should be guarded against, children should be encouraged to be neat in person and dress.

The mother should strive also to make her boy manly. Possibly, as a pet, her boy has in infancy had his hair curled. Even now, when he is six or eight years of age, the curls look very pretty. But the mother must forego her further pleasure in the curls; for the boy, to take his place along with the others, to run and jump, to grow manly and strong, must wear short hair. His mother can no longer dress it like a girl's. It will be necessary and best to cut off his curls.

Hints to Ladies.

Best taste will dictate an observance of fashion, avoiding extremes. Dress the hair so that it will exhibit variety and relief, without making the forehead look too high.

Have one pronounced color in dress, all other colors harmonizing with that. See "Harmony of Colors."

A dress should fit the form. Well-fitted and judiciously trimmed, a calico dress is handsomer than an ill-fitting silk dress.

To present a handsome appearance, all the appurtenances of the lady's dress should be scrupulously neat and clean. Every article that is designed to be white should be a pure white, and in perfect order.

Much taste may be displayed in dress about the neck, and care should be observed not to use trimmings that will enlarge the appearance of the shoulders. The dress should be close-fitting about the waist and shoulders, though it should not be laced too tightly.

As with the gentleman, quiet colors are usually in best taste. Heavy, rich, dark materials best suit the woman of tall figure; while light, full draperies should be worn only by those of slender proportions. Short persons should beware of wearing flounces, or horizontal trimmings that will break the perpendicular lines as the effect is to make them appear shorter. The pictorial illustrations herewith show how differently people appear with different dress, our opinions of their intellectual capacity, their standing and respectability being largely influenced at first sight by this appearance.

Care should be taken to dress according to the age, the season, the employment and the occasion. As a rule, a woman appears her loveliest when, in a dress of dark color, we see her with the rosy complexion of health, her hair dressed neatly, her throat and neck tastefully cared for, her dress in neither extreme of fashion, while the whole is relieved by a moderate amount of carefully selected jewelry.

We have aimed in this chapter on the toilet to present the scientific principles of dress—principles that can be applied at all times, whatever may be the fashion. It now remains for the reader to study these principles and apply them in accordance with the rules of common sense and the fashions as they may prevail.

ETIQUETTE OF The Street.

RULES OF CONDUCT TO BE OBSERVED.

LADIES and gentlemen, when meeting on the sidewalk, should always pass to the right. Should the walk be narrow or dangerous, gentlemen will always see that ladies are protected from injury.

Ladies should avoid walking rapidly upon the street, as it is ungraceful and unbecoming.

Running across the street in front of carriages is dangerous, and shows want of dignity.

The gentleman should insist upon carrying any package which the lady may have, when walking with her.

Before recognizing a lady on the street, the gentleman should be certain that his recognition will meet with favor.

No gentleman should stand on the street-corners, steps of hotels, or other public places, and make remarks about ladies passing by.

A gentleman may take two ladies upon his arms, but under no circumstances should the lady take the arms of two gentlemen.

Upon the narrow walk, for her protection, the gentleman should generally give the lady the inside of the walk (Fig. 21), passing behind her when changing at corners.

Allowing a dress to trail on the street is in exceedingly bad taste. Such a street costume simply calls forth criticism and contempt from the more sensible people.

A gentleman walking with a lady should accommodate his step and pace to hers. For the gentleman to be some distance ahead, presents a bad appearance.

Should protection on the street be necessary, it is customary for the gentleman to give his right arm to the lady; but if more convenient, he may give the left.

The Street.

It is courtesy to give silent, respectful attention as a funeral procession passes. It shows want of respect to pass between the carriages while the procession is moving.

Staring at people, spitting, looking back after they pass, saluting people across the street, calling out loudly or laughing at people as they go by, are all evidences of ill-breeding.

The gentleman accompanying a lady should hold the door open for the lady to enter first. Should he be near the door when a lady, unattended, is about to enter, he will do the same for her.

In the evening, or whenever safety may require, a gentleman should give a lady his arm. It is not customary in other cases to do so on the street, unless with an elderly lady, or the couple be husband and wife.

A gentleman will assist a lady over a bad crossing, or from an omnibus or carriage, without waiting for the formality of an introduction. When the service is performed, he will raise his hat, bow, and pass on.

In a street car or an omnibus, the passengers who are seated should strive to give seats to those who are standing, rendering such accommodation as they would themselves desire under similar circumstances.

When crossing the pavement, the lady should raise her dress with the right hand, a little above the ankle. To raise the dress with both hands, is vulgar, and can be excused only when the mud is very deep.

No gentleman will smoke when walking with, or standing in the presence of, a lady on the street. He should remove the cigar from her presence entirely, even though permission be granted to continue the smoking.

A gentleman should give his seat to any lady who may be standing in a public conveyance. For this favor she should thank him, which courtesy he should acknowledge by a slight bow. In an omnibus he will pass up the ladies' fares.

A true lady will go quietly and unobtrusively about her business when on the street, never seeking to attract the attention of the opposite sex, at the same time recognizing acquaintances with a courteous bow, and friends with pleasant words of greeting.

Swinging the arms when walking, eating upon the street, sucking the parasol handles, pushing violently through a crowd, very loud and boisterous talking and laughing on the streets, and whispering in public conveyances, are all evidences of ill-breeding in ladies.

A lady should have the escort of a gentleman in the evening. A gentleman at the house where she may call may return with her if she goes unattended; gossip and scandal are best avoided, however, if she have some one from her home call for her at an appointed hour.

On the narrow street-crossing the gentleman will allow the lady to precede him, that he may see that no injury befalls her.

Should a lady stop in the street, when meeting a gentleman, it is courtesy for him to stop also. Should his business be urgent, he will apologize for not continuing the conversation, and ask to be excused. Should it be desirable to lengthen the interview, and the lady resumes her walk in the midst of her conversation, it is courtesy for him to turn and accompany her. Should she desire to end the conversation, a slight bow from her will indicate the fact, when he should bid her "good day"[*] and take his leave.

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[*] Some authorities claim that it is most sensible for the lady to walk always at the right of the gentleman, whether on the street or indoors; her right hand being thus free to hold trail, fan or parasol.

UNCLASSIFIED

Laws of Etiquette.

Travelling.

NEVER exaggerate.

Never point at another.

Never betray a confidence.

Never wantonly frighten others.

Never leave home with unkind words.

Never neglect to call upon your friends.

Never laugh at the misfortunes of others

Never give a promise that you do not fulfill.

Never speak much of your own performances.

Never fail to be punctual at the appointed time.

Never make yourself the hero of your own story.

Never send a present hoping for one in return.

Never pick the teeth or clean the nails in company.

Never fail to give a polite answer to a civil question.

Never question a servant or a child about family matters.

Never present a gift saying that it is of no use to yourself.

Never read letters which you may find addressed to others.

Never fail, if a gentleman, of being civil and polite to ladies.

Never call attention to the features or form of any one present.

Never refer to a gift you have made or favor you have rendered.

Never associate with bad company. Have good company or none.

Never look over the shoulder of another who is reading or writing.

Never seem to notice a scar, deformity or defect of any one present.

Never arrest the attention of an acquaintance by a touch. Speak to him.

Never punish your child for a fault to which you are addicted yourself.

Never answer questions in general company that have been put to others.

Never, when traveling abroad, be over-boastful in praise of your own country.

Never call a new acquaintance by the Christian name unless requested to do so.

Never lend an article you have borrowed unless you have permission to do so.

Never attempt to draw the attention of the company constantly upon yourself.

Never exhibit anger, impatience or excitement when an accident happens.

Never pass between two persons who are talking together, without an apology.

Never enter a room noisily; never fail to close the door after you, and never slam it.

Never forget that if you are faithful in a few things, you may be ruler over many.

Never exhibit too great familiarity with the new acquaintance; you may give offense.

Never will a gentleman allude to conquests which he may have made with ladies.

Never fail to offer the easiest and best seat in the room to an invalid, an elderly person, or a lady.

Never neglect to perform the commission which the friend intrusted to you. You must not forget.

Never send your guest, who is accustomed to a warm room, off into a cold, damp, spare bed to sleep.

Never enter a room filled with people without a slight bow to the general company when first entering.

Never fail to answer an invitation, either personally or by letter, within a week after the invitation is received.

Never accept of favors and hospitalities without rendering an exchange of civilities when opportunity offers.

Never cross the legs and put out one foot in the street-car or places where it will trouble others when passing by. (*See Illustration.*)

Never fail to tell the truth. If truthful you get your reward. You will get your punishment if you deceive.

Never borrow money and neglect to pay. If you do you will soon be known as a person of no business integrity.

Never write to another asking for information, or a favor of any kind, without inclosing a postage stamp for the reply.

Never compel a woman with an infant in arms to stand while you retain your seat. (*See Illustration.*)

Never fail to say kind and encouraging words to those whom you meet in distress. Your kindness may lift them out of their despair.

Never refuse to receive an apology. You may not revive friendship, but courtesy will require, when an apology is offered, that you accept it.

Never examine the cards in the card-basket. While they may be exposed in the drawing-room, you are not expected to turn them over unless invited to do so.

Never, when walking arm in arm with a lady, be continually changing and going to the other side, because of change of corners. It shows too much attention to form.

Never should the lady accept of expensive gifts at the hands of a gentleman not related or engaged to her. Gifts of flowers, books, music or confectionery may be accepted.

Never insult another by harsh words when applied to for a favor. Kind words do not cost much, and yet they may carry untold happiness to the one to whom they are spoken.

Never fail to speak kindly. If a merchant, and you address your clerk; if an overseer, and you address your workmen; if in any position where you exercise authority, you show yourself to be a gentleman by your pleasant mode of address.

Never attempt to convey the impression that you are a genius by imitating the faults of distinguished men. Because certain great men were poor penmen, wore long hair, or had other peculiarities, it does not follow that you will be great by imitating their eccentricities.

Never give all your pleasant words and smiles to strangers. The kindest words and the sweetest smiles should be reserved for home. Home should be our heaven.

"We have careful thought for the stranger
  And smiles for the sometimes guest;
But oft for our own the bitter tone,
  Though we love our own the best.
Ah! lips with the curl impatient—
  Ah! brow with the shade of scorn,
'Twere a cruel fate were the night too late
  To undo the work of the morn."

Etiquette of Conversation.

HOW, WHEN AND WHERE TO SPEAK.

TO ACQUIRE the art of conversation in a superior degree, there must be intimacy with those who possess refinement and general information. There must also be observed certain general rules in order to accomplish the best results, prominent among which are the following:

In the first place, in order to converse well, there must be knowledge; there must be a command of language, assisted by imagination; there must be understanding of the rules of construction to frame sentences aright; there must be confidence and self-possession, and there must be courage to overcome failure.

To be an excellent conversationalist is a very desirable accomplishment. We talk more than we do anything else. By conversation we may make friends, we may retain them, or we may lose them. We may impart information; we may acquire it. We may make the company with whom we associate contented with itself, or we can sow inharmony and discord. Our success in life largely rests upon our ability to converse well; therefore, the necessity of our carefully studying what should and what should not be said when talking.

Out-doors.

How to Please in Conversation.

Use clear, distinct words to express your ideas, although the tone of your voice should be subdued.

Be cool, collected and self-possessed, using respectful, chaste and appropriate language.

Always defend the absent person who is being spoken of, as far as truth and justice will permit.

Allow people that you are with to do their full share of the talking if they evince a willingness to converse.

Beware of talking much about yourself. Your merits will be discovered in due time without the necessity of sounding your own praises.

Show the courtesy, when another person joins the group where you are relating an incident, of recapitulating what has been said, for the advantage of the new-comer.

Recollect that the object of conversation is to entertain and amuse; the social gathering, therefore, should not be made the arena of dispute. Even slight mistakes and inaccuracies it is well to overlook, rather than to allow inharmony to present itself.

Aim to adapt your conversation to the comprehension of those with whom you are conversing. Be careful that you do not undervalue them. It is possible that they are as intelligent as yourself, and their conversation can, perhaps, take as wide a range as your own.

Remember that the person to whom you are speaking is not to blame for the opinion he entertains. Opinions are not made *by* us, but they are made *for* us by circumstances. With the same organization, training and circumstances around us, we would have the same opinions ourselves.

Remember that people are fond of talking of their own affairs. The mother likes to talk of her children, the mechanic of his workmanship, the laborer of what he can accomplish. Give every one an opportunity, and you will gain much valuable information besides being thought courteous and well-bred.

Be patient. The foreigner cannot, perhaps, recall the word he desires; the speaker may be slow of speech; you may have heard the story a dozen times; but even then you must evince interest and listen patiently through. By so doing you gain the esteem of the person with whom you are conversing.

What to Avoid in Social Conversation.

Do not manifest impatience.
Do not engage in argument.
Do not interrupt another when speaking.
Do not find fault, although you may gently criticise.
Do not talk of your private, personal and family matters.
Do not appear to notice inaccuries of speech in others.

Do not allow yourself to lose temper or to speak excitedly.

Do not allude to unfortunate peculiarities of any one present.

Do not always commence a conversation by allusion to the weather.

Do not, when narrating an incident, continually say "you see," "you know," etc.

Do not introduce professional or other topics in which the company generally cannot take an interest.

Do not talk very loud. A firm, clear, distinct, yet mild, gentle and musical voice has great power.

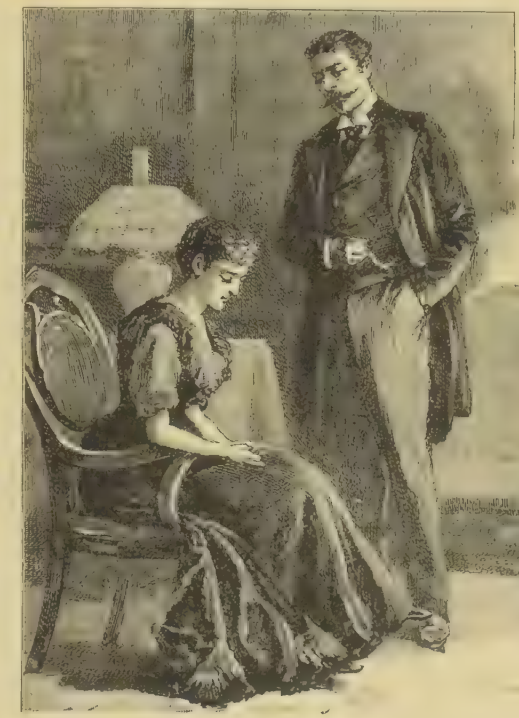
Do not be absent-minded, requiring the speaker to repeat what has been said that you may understand.

Do not speak disrespectfully of personal appearance when any one present may have the same defects.

Do not try to force yourself into the confidence of others. If they give their confidence, never betray it.

Do not use profanity, vulgar terms, slang phrases, words of double meaning, or language that will bring the blush to any person.

Do not intersperse your language with foreign words and high-sounding terms. It shows affectation, and will draw ridicule upon you.



In-doors.

Do not carry on a conversation with another in company about matters of which the general company knows nothing. It is almost as impolite as to whisper.

Do not allow yourself to speak ill of the absent if it can be avoided; the day may come when some friend will be needed to defend you in your absence.

Do not speak with contempt and ridicule of a locality where you may be visiting. Find something to truthfully praise and commend; thus make yourself agreeable.

Do not make a pretense of gentility, nor parade the fact that you are a descendant of any notable family. You must pass for just what you are, and must stand on your own merit.

Do not contradict. In making a correction say, "I beg your pardon, but I had an impression that it was so and so." Be careful in correcting, as you may be wrong yourself.

Do not be unduly familiar; you will merit contempt if you are. Neither should you be dogmatic in your assertions, arrogating to yourself much consequence in your opinions.

Do not be too lavish in your praise of various members of your own family when speaking to strangers; the person to whom you are speaking may know some faults that you do not.

Do not allow yourself to use personal abuse when speaking to another, as in so doing you may make that person a life long enemy. A few kind, courteous words might have made him a life-long friend.

Do not discuss politics or religion in general company. You probably would not convert your opponent, and he will not convert you. To discuss those topics is to arouse feeling without any good result.

Do not make a parade of being acquainted with distinguished or wealthy people, of having been to college, or of having visited foreign lands. All this is no evidence of any real genuine worth on your part.

Do not use the surname alone when speaking of your husband or wife to others. To say to another, that "I told Jones," referring to your husband, sounds badly. Whereas, to say, "I told Mr. Jones," shows respect and good-breeding.

Do not feel it incumbent upon yourself to carry your point in conversation. Should the person with whom you are conversing feel the same, your talk will lead into violent argument.

Do not yield to bashfulness. Do not isolate yourself, sitting back in a corner, waiting for some one to come and talk with you. Step out; have something to say. Though you may not say it very well, keep on. You will gain courage and will improve. It is as much your duty to entertain others as theirs to amuse you.

Do not attempt to pry into the private affairs of others by asking what their profits are, what things cost, whether Melissa ever had a beau, and why Amarette never got married. All such questions are extremely impertinent, and are likely to meet with rebuke.

Do not whisper in company; do not engage in private conversation; do not speak a foreign language which the general company present may not comprehend, unless it is understood that the foreigner is unable to speak your own language.

Do not take it upon yourself to admonish comparative strangers on religious topics; the persons to whom you speak may have decided convictions of their own in opposition to yours, and your over-zeal may seem to them an impertinence.

Do not aspire to be a great story-teller; an inveterate teller of long stories becomes very tiresome. To tell one or two witty, short, new stories, appropriate to the occasion, is about all that one person should inflict on the company.

Do not indulge in satire; no doubt you are witty, and you could say a most cutting thing that would bring the laugh of the company upon your opponent, but you must not allow it, unless to rebuke an impertinent fellow who can be suppressed in no other way.

Do not forget that "words are the chariot wheels of thought," and that Dr. Samuel Johnson, Addison and Goldsmith won honor by the grace and eloquence of their language.

Do not spend your time in talking scandal; you sink your own moral nature by so doing, and you are, perhaps, doing great injustice to those about whom you talk. You probably do not understand all the circumstances. Were they understood, you would, doubtless, be much more lenient.

Do not flatter; in doing so you embarrass those upon whom you bestow praise, as they may not wish to offend you by repelling it, and yet they realize that if they accept it they merit your contempt. You may, however, commend their work whenever it can truthfully be done; but do not bestow praise where it is not deserved.

Etiquette of the Table.

THE TABLE--HOW TO SET AND ARRANGE IT.

THE dinner-hour will completely test the refinement, the culture and good breeding which the individual may possess. To appear advantageously at the table, the person must not only understand the laws of etiquette, but he must have had the advantage of polite society. It is the province of this chapter to show what the laws of the table are. It will be the duty of the reader, in the varied relations of life, to make such use of them as circumstances shall permit.

If asked at the next course what you desire, you will quietly state, and upon its reception you will, without display, proceed to put your food in order for eating. If furnished with potatoes in small dishes, you will put the skins back into the dish again; and thus where there are side-dishes all refuse should be placed in them—otherwise potato-skins will be placed upon the table-cloth, and bones upon the side of the plate. If possible, avoid putting waste matter upon the cloth. Especial pains should always be taken to keep the table-cover as clean as may be.

Dining Table.

Rules to be Observed.

Sit upright, neither too close nor too far away from the table.

Open and spread upon your lap or breast a napkin, if one is provided—otherwise a handkerchief.

Do not be in haste; compose yourself; put your mind into a pleasant condition, and resolve to eat slowly.

Keep the hands from the table until your time comes to be served. It is rude to take knife and fork in hand and commence drumming on the table while you are waiting.

Possibly grace will be said by some one present, and the most respectful attention and quietude should be observed until the exercise is passed.

It is the most appropriate time, while you wait to be served, for you to put into practice your knowledge of small talk and pleasant words with those whom you are sitting near. By interchange of thought, much valuable information may be acquired at the table.

Do not be impatient to be served. With social chit-chat and eating, the meal-time should always be prolonged from thirty minutes to an hour.

Taking ample time in eating will give you better health, greater wealth, longer life and more happiness. These are what we may obtain by eating slowly in a pleasant frame of mind, thoroughly masticating the food.

If soup comes first, and you do not desire it, you will simply say, "No, I thank you," but make no comment; or you may take it and eat as little as you choose. The other course will be along soon. In receiving it you do not break the order of serving; it looks odd to see you waiting while all the rest are partaking of the first course. Eccentricity should be avoided as much as possible at the table.

The soup should be eaten with a medium-sized spoon, so slowly and carefully that you will drop none upon your person or the table-cloth. Making an effort to get the last drop, and all unusual noise when eating, should be avoided.

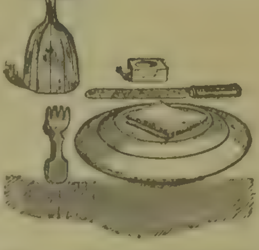


Fig. 10. Relative position of plate, napkin, goblet, salt-cup, knife and fork, when the table is set.

Eating with the Fork.

Fashions continually change. It does not follow, because he does not keep up with them, that a man lacks brains; still to keep somewhere near the prevailing style, in habit, costume and general deportment, is to avoid attracting unpleasant attention.

Fashions change in modes of eating. Unquestionably primitive man conveyed food to his mouth with his fingers. In process of time he cut it with a sharpened instrument, and held it, while he did so, with something pointed. In due time, with the advancement of civilization, there came the two-tined fork for holding and the broad-bladed knife for cutting the food and conveying it to the mouth. As years have passed on, bringing their changes, the three and four-tined forks have come into use, and the habit of conveying food with them to the mouth; the advantage being that there is less danger to the mouth from using the fork, and food is less liable to drop from it when being conveyed from the plate. Thus the knife, which is now only used for cutting meat, mashing potatoes, and for a few other purposes at the table, is no longer placed to the mouth by those who give attention to the etiquette of the table.

Set the table as beautifully as possible. Use only the snowiest of linen, the brightest of cutlery, and the cleanest of china. The setting of the table (Fig. 9) will have fruit-plates, castors and other dishes for general use, conveniently placed near the center. The specific arrangement (Fig. 10) of plate, knife, fork, napkin, goblet and salt-cup, is shown in the accompanying illustration.

It is customary for the gentleman who is the head of the household, in the ordinary family circle, to sit at the side of the table, in the center, having plates at his right hand, with food near by. When all the family are seated, and all in readiness, he will serve the guests who may be present; he will next serve the eldest lady of the household, then the ladies and gentlemen as they come in order. The hostess will sit opposite her husband, and preside over the tea, sauces, etc.

ERRORS TO BE AVOIDED.

DO NOT speak disrespectfully to the waiters, nor apologize to them for making them trouble; it is their business to bring forward the food called for. It is courtesy, however, when asked if you desire a certain article, to reply, "If you please;" "Not any, I thank you," etc.; when calling for an article, to say, "Will you please bring me," etc.; and when the article has been furnished, to say, "Thank you."

Never eat very fast.

Never fill the mouth very full.

Never open your mouth when chewing.

Never make noise with the mouth or throat.

Never attempt to talk with the mouth full.

Never leave the table with food in the mouth.

Never soil the table-cloth if it is possible to avoid it.

Never carry away fruits and confectionery from the table.

Never encourage a dog or cat to play with you at the table.

Never use anything but fork or spoon in feeding yourself.

Never explain at the table why certain foods do not agree with you.

Never introduce disgusting or unpleasant topics for conversation.

Never pick your teeth or put your hand in your mouth while eating.

Never cut bread; always break it, spreading with butter each piece as you eat it.

Never come to the table in your shirt-sleeves, with dirty hands or disheveled hair.

Never express a choice for any particular parts of a dish, unless requested to do so.

Never hesitate to take the last piece of bread or the last cake; there are probably more.

Never call loudly for the waiter, nor attract attention to yourself by boisterous conduct.

Never hold bones in your fingers while you eat from them. Cut the meat with a knife.

Never use your own knife when cutting butter. Always use a knife assigned to that purpose.

Bad Manners at Table.

Never pare an apple, peach or pear for another at the table without holding it with a fork.

Never wipe your fingers on the table-cloth, nor clean them in your mouth. Use the napkin.

Never allow butter, soup or other food to remain on your whiskers. Use the napkin frequently.

Never wear gloves at the table, unless the hands from some special reason are unfit to be seen.

Never, when serving others, overload the plate nor force upon them delicacies which they decline.

Never pour sauce over meat and vegetables when helping others. Place it at one side, on the plate.

Never make a display of finding fault with your food. Very quietly have it changed if you want it different.

Never pass your plate with knife and fork on the same. Remove them, and allow them to rest upon a piece of bread.

Never make a display when removing hair, insects or other disagreeable things from your food. Place them quietly under the edge of your plate.

Never make an effort to clean your plate or the bones you have been eating from too clean; it looks as if you left off hungry.

Never tip back in your chair nor lounge upon the table; neither assume any position that is awkward or ill-bred.

Never, at one's own table or at a dinner-party elsewhere, leave before the rest have finished without asking to be excused. At a hotel or boarding house this rule need not be observed.

Never feel obliged to cut off the kernels with a knife when eating green corn; eaten from the cob, the corn is much the sweetest.

Never eat so much of any one article as to attract attention, as some people do who eat large quantities of butter, sweet cake, cheese or other articles.

Never expectorate at the table; also avoid sneezing or coughing. It is better to arise quietly from the table if you have occasion to do either. A sneeze is prevented by placing the finger firmly on the upper lip.

Never spit out bones, cherry pits, grape skins, etc., upon your plate. Quietly press them from your mouth upon the fork, and lay them upon the side of your plate.

Never allow the conversation at the table to drift into anything but chit-chat; the consideration of deep and abstruse principles will impair digestion.

Never permit yourself to engage in a heated argument at the table. Neither should you use gestures, nor illustrations made with a knife or fork on the table-cloth. The accompanying engraving (Fig. 11) very forcibly illustrates several faults to which many people are addicted.

Never pass forward to another the dish that has been handed to you, unless requested to do so; it may have been purposely designed for you, and passing it to another may give him or her what is not wanted.

Never put your feet so far under the table as to touch those of the person on the opposite side, neither should [illegible] nor at the side of your chair.

Never praise extravagantly every dish set before you; neither should you appear indifferent. Any article may have praise.

POLITENESS AT THE TABLE.

PROPERLY conducted, the dinner-party should be a pleasant affair; and if rightly managed, from the beginning to the end, it may prove a very enjoyable occasion to all in attendance, the dinner being from 5 to 8 P. M., the guests continuing at the table from one to two hours.

For a very pleasant social affair the rule is not to have the company when seated exceed twelve in number. With a party of that size the conversation can be general, and all are likely to feel more at ease than if the number be larger, provided a selection of guests is made that are congenial to each other. None of them should be conspicuously superior to the others, and all should be from the same circle of society.

Having determined upon the number of guests to be invited, the next thing in order will be the issuing of notes of invitation, by special messenger, which should be sent out ten or twelve days before the dinner is given. Their form will be—

Mr. and Mrs. L—— request the pleasure of the company of Mr. and Mrs. T—— at dinner on Wednesday, the 10th of March, at six o'clock P. M.

R. S. V. P.

The answer accepting the invitation may read—

Mr. and Mrs. T—— accept with much pleasure Mr. and Mrs. L——'s invitation for dinner on the 10th of March.

If declined, the form may be as follows:

Mr. and Mrs. T—— regret that a previous engagement (or for other reasons which may be given) *will prevent their accepting Mr. and Mrs. L——'s kind invitation for dinner on the 10th of March.*

Should the invitation be declined, the declination, which should state the reason for non-acceptance of the invitation, should be sent immediately by a messenger, that the hostess may have an opportunity for inviting other guests in the place of those who decline.

Should the invitation be accepted, nothing but serious difficulty should prevent the appointment being fulfilled. Should anything happen to prevent attendance, notification should be given the hostess immediately.

It is of the utmost importance that all of the company be punctual, arriving from ten to fifteen minutes before the appointed time. To be ten minutes late, keeping the dinner waiting, is a serious offense which no one should be guilty of.

The host, hostess and other members of the family should be early in the drawing-room to receive guests as they arrive, each of whom should be welcomed with a warm greeting.

The hostess having determined who shall accompany each other to the table, each gentleman should be informed what lady he is expected to escort. The hour having arrived, the host offers his right arm to the most honored or possibly the eldest lady guest, and the gentleman most distinguished will escort the lady of the house.

Proceeding to the dining-room when all is in readiness, the host will take his seat at the foot of the table, and the hostess at the head, the lady escorted by the host taking her seat at his right, and the escort of the hostess sitting also at *her* right. The next most honored seat is at the *left* of the hostess. The illustration (Fig. 12) upon this page shows a company thus seated.

It is fashionable to have cards laid upon the table, bearing the name, sometimes printed very beautifully upon silk, indicating where each guest shall sit, which saves confusion in being seated. The ladies having taken their places, the gentlemen will be seated, and all is in readiness for the dinner to be served, unless grace be said by a clergyman present or by the host

Let us hope if there is any carving, it will be done before the meat is brought to the table, and the time of the company saved from this sometimes slow and tedious work. Should soup be passed, it is well for each one to take it, and also the various courses as they are served, making no special comment on the food.

Good Manners at Table.

The gentleman will, when a dish is brought, having seen the lady he escorted provided for, help himself and pass it on; he will pay no attention to the other lady near him, but will leave that to her escort. In all cases he will be careful and attentive to the wants of the lady in his charge, ascertaining her wishes and issuing her orders to the waiters.

No polite guest will ever fastidiously smell or examine any article of food before tasting it. Such conduct would be an insult to those who have invited him; neither will the host or hostess apologize for the cooking or find fault with each other, the cook or the waiters; all having done the best they could, there is nothing left to do but to make the best of everything that is provided.

Especial pains should be taken by the host and hostess, as well as all the company, to introduce topics of conversation that shall be agreeable and pleasing, that the dinner hour may be in the highest degree entertaining. When all the guests have finished their eating, the hostess, with a slight nod to one of the leading members of the party, will rise, as will all the company, and repair to the drawing-room, where, in social converse, the time should be spent for the next two or three hours. Etiquette demands that each member of the company remain at least an hour after the dinner is finished, it being impolite to hurry away immediately after rising from the table. Should he do so, however, he will ask to be excused.

CORRECT AND INCORRECT POSITIONS.

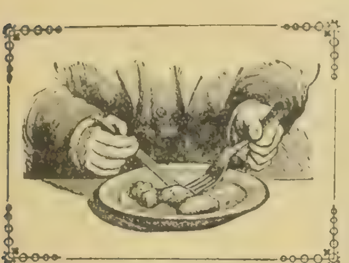


Fig. 13. Incorrect Position for Holding Knife and Fork.

HEREWITH is shown a fault common with many people of holding knife and fork above the hand (Fig. 13) when mashing potatoes, cutting meat, etc. The position is not only unfavorable for obtaining a good command of knife and fork, but it is likewise ungraceful. The contrasting illustration (Fig. 14) represents an easy, graceful posture for hands, when eating. The habit of holding the hands thus in correct positions can be acquired as easily as any other.

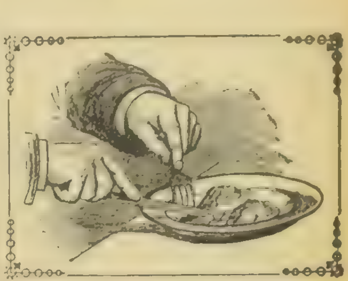


Fig. 14. Correct Position for Holding Knife and Fork.

It is well to become accustomed to eating with the left hand, so as to avoid the necessity of changing the fork from the left to the right hand frequently when eating meat. When no knife is required for spreading, mashing or cutting, lay it aside entirely and eat only with the fork, holding it with the right hand.

Drinking from the Teacup.

Formerly it was the fashion to pour tea into the saucer; not so now. Tea should be gently sipped from the spoon or cup, taking cup and spoon in hand (Fig. 15) when drinking, as shown in the accompanying diagram.

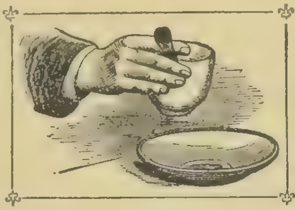


Fig. 15. Position for Holding Cup and Spoon. *

The spoon should never be removed from the cup when the guest is satisfied with its contents. Should the cup be empty, and more be desired, to take the spoon out and place it beside the cup in the saucer is an intimation to the waiter to have it refilled. If not empty, and the spoon is placed thus beside the cup, it is an intimation to the waiter that you want the tea or coffee changed. Do not call for "milk;" call for and speak only of "cream." Never set your teacup upon the table-cloth. In taking sugar, use only the sugar-spoon.

As in all the affairs of life, common sense must always rise superior to fashion or forms of etiquette. In this chapter on "The Table" we have aimed to give the leading outlines which should govern conduct in the dining-room. Much judgment will be required to always understand where these rules should be applied. Certainly to meet a company of people at the table, appear to advantage, carry forward an intelligent conversation, be agreeable and finish the meal, having eaten, in kind and quantity, sufficient to preserve health and vigor, requires much wisdom and experience.

* The cup with handle, or of unusual size, may be held differently.

Etiquette of Parties in General.

Sociables, Tea-Parties, Private Theatricals, Picnics, Etc.

THERE are many other kinds of gatherings, aside from the formal dinner-party and the ball, where less formality is required, but where the rules of etiquette, nevertheless, must be continually brought into service. These comprise conversations, or sociables, private concerts, readings, tea-parties, private theatricals, card-playing, etc. At these entertainments some prefer dancing, some music, some conversation, and some the playing of games.

Whatever may be the nature of the entertainment, it is well to specify it in the invitation. Thus, for a large, full-dress party, the invitation will read:

Miss J——'s compliments to Miss H——, requesting the pleasure of her company for Friday evening, March 10, at eight o'clock.

For the small party meeting for a specific purpose, the invitation will read thus:

Miss B—— requests the pleasure of Miss K——'s company on Friday evening next at 8 o'clock, to meet the members of the Salem Literary Club, to which Miss B—— belongs.

Or,

Miss B—— would be happy to have Miss K—— take part in an entertainment consisting of readings and recitations, at her residence, on Wednesday evening, March 15th, at eight o'clock.

Like the dinner-party and ball, an answer should be promptly returned. The reply may read:

Miss K—— accepts with pleasure Miss B——'s kind invitation for next Wednesday evening.

Unable to accept the invitation, the reply may read as follows:

Miss K—— regrets that a previous engagement (or other reason) *will prevent her accepting Miss B——'s kind invitation for Wednesday evening next.*

Should there be any probability of mistake as to time, and identity of the person sending the invitation, the date should be explicitly given in the body of the note, and the full name and address may be placed in the lower left-hand corner.

As upon other occasions, it is the duty of the host and hostess to welcome arrivals and make all the guests feel at ease. To do this, much depends upon the hostess, who, by self-possession, geniality and continual movement among the guests, will make all feel at home. More especially if the entertainment partakes of the character of a sociable, much tact is necessary upon the part of the family to have the gathering entertained.

To keep the attention of the company occupied, as many rooms should be thrown open as possible, and many objects of interest should be scattered around the apartments to interest, amuse and instruct.

If among the company there are those particularly eminent, there should be also other notables, that attention may not be entirely concentrated upon the few.

Special pains should be taken that the party does not divide itself up into cliques, twos, threes or more, leaving a number out who seem to possess no power to get into conversation.

While it is not always advisable to break up a pleasant conversation going forward between two, three or four, care must be exercised that those inclined to drop aside and spend the time in conversing with each other are prevented by the hostess as much as possible from so doing, as the best conversationalists, thus going by themselves, would cause the remainder of the company to be wanting in spirit and animation. The introduction of others into the group, the calling for a story, the reading of a poem, the singing of a song, with instrumental music, will thus effectually break up the monotony.

Piano-Playing.

Should dancing form a principal feature of the entertainment, and the piano be used to furnish music, the hostess or one of the family should play the instrument. One of the guests should not be depended upon to furnish all of the music. If the hostess cannot play, a pianist for the occasion should be engaged. Either a lady or gentleman-guest may with propriety volunteer to play, if they choose; but the hostess cannot expect that music, thus voluntarily offered, will be cheerfully furnished for more than one dance.

It is courtesy, while anyone is playing an instrument, or singing, to preserve as much stillness as possible. Should you converse, do it so quietly as not to be heard by those near the piano. Should your conversation be animated, it is well to retire to another room.

Amateur performers upon the piano should thoroughly commit to memory a few pieces to play independently of notes, as to take sheet-music to a party is a hint that they expect to be invited to play. If possible, have the voice in good condition also, so as not to be obliged to complain of a cold. To eat a small amount of horse-radish just previous to reading, singing or speaking, will quite effectually remove hoarseness.

Any lady-guest being invited to play the piano, it is courtesy for the gentleman nearest her to offer his arm and escort her to the instrument. While she is playing he will hold her bouquet, fan and gloves, and should also turn the leaves if he can readily read music, but he should not attempt it otherwise.

When a guest is invited by another guest to play the piano, it will be well to wait until the request is seconded by others; and even then the guest may not play unless it should meet the favor of the hostess, and it is believed to be the pleasure of the majority of the company. If certain that the playing will be acceptable, it is well to suggest to the hostess to invite your friend.

It is very impolite to speak disparagingly of the piano, however much it may be out of tune, or however inferior it may be. More especially is it a breach of etiquette to draw unfavorable comparisons between the instrument and another elsewhere.

How to Entertain the Party.

If it happens to be stormy on the evening of your party, an awning erected from the carriage-landing to the house, or a large umbrella carried by a servant, will be a kind provision for the comfort of the guests as they alight from their carriages.

Suppers have wisely been dispensed with of late years at the ordinary evening party. To furnish a full, late supper is a piece of folly for various reasons; among them being the fact that it is positively injurious to the health of the company to eat it. The majority of the party, in all probability, do not desire it; and consequently it is time, labor and expense, upon the part of the hostess, worse than thrown away. She should have all of her time to devote to her company; to do which, she can provide only light refreshments, which may be passed around.

Among the methods of entertainment resorted to, aside from conversation and dancing, may be those of a literary character. Thus a debatable question may be propounded, a presiding officer selected, assisted by two, four or six others, two leading disputants appointed, debaters chosen upon each side, and the speakers given each two, three or five minutes to talk; the president and board of arbitration to decide the question according to the weight of argument. This is a pleasant and profitable way of spending the evening, if all can be enlisted and be interested in listening or have something to say.

Another intellectual and pleasant mode of spending an evening is for each member of the company to read or recite something that shall interest, amuse, instruct and entertain the audience. To do this rightly, some one should be appointed to act as master of ceremonies for the evening, being assisted by two or three others, who will make suggestions. It will be the duty of the presiding officer, at these parlor recitations, to ascertain in the beginning what each one will recite, make out a programme, and then announce the various readers and speakers of the evening, as they come in turn, having the exercises suitably interspersed with music. The pleasure of the occasion will much depend upon having every piece upon the programme short, and clearly announced by the presiding officer.

Parlor-theatricals and parlor-concerts are a pleasant means of entertaining an evening gathering — a company of six, eight, or more, thoroughly mastering a play and giving it to an audience that may assemble in the parlors. To have an entertainment of this kind pass smoothly through, some competent person must take upon himself or herself the duties of manager. Each player should be consulted before parts are assigned, and it is of the utmost importance that the players be each prompt in rendering their parts. It is the province of the hostess to act the part of stage-manager, unless she appoints some one from the audience to conduct the exercises.

Croquet parties are very fashionable, and are a healthful, pleasant means of diversion. The essentials necessary to make the game pleasant are good grounds that can be shaded, and clean, comfortable, cool seats. A table may be set in the shade, and refreshments served thereon; or they may be passed to the guests as they sit in their seats.

On all occasions when a number of people convene together, whether indoors or out, the laws of courtesy should be obeyed. It is the duty of the gentlemen to be ever attentive to the ladies. If it be a picnic, the gentlemen will carry the luncheon, erect the swings, construct the tables, bring the water, provide the fuel for boiling the tea, etc. On the fishing excursion they will furnish the tackle, bait the hooks, row the boats, carry the fish, and furnish comfortable seats for the ladies. In gathering nuts, they will climb the trees, do the shaking, carry the nuts, and assist the ladies across the streams and over the fences. If possible, in crossing the fields, go through the bars or gateway, and avoid the necessity of compelling the ladies to clamber over the fences. Should it be necessary to climb them, it is etiquette for the gentleman to go over first, and when the lady is firmly on the top, he will gently help her down.

It should ever be the rule, with both ladies and gentlemen, upon all such occasions, to render every assistance possible to entertain the company. Self should be forgotten. More or less assistance is all the time required by the managers of the outdoor gatherings, and labor is continually necessary to make the occasion pleasant. To aid in rendering the affair agreeable by needed assistance will very likely give you more pleasure than to be entertained yourself.

Etiquette for Public Places.

It is not etiquette for a young lady to visit a place of public amusement with a gentleman, alone, with whom she is but slightly acquainted. Her escort should the first time invite another member of the family to accompany her.

The gentleman should make a point of extending his invitation to the lady long enough before the entertainment to be able to secure desirable seats. Most of the pleasure of the occasion will depend upon being so seated as to be able to witness the performance to advantage.

The lady having received a note of invitation, she should reply to the same immediately, that the gentleman may make his arrangements accordingly.

Should the weather be stormy, and for other reasons, it will be a very graceful way of complimenting the lady to provide a carriage for the occasion.

Seats having been secured, it is not necessary to arrive until about five minutes before the commencement of the performance. It is bad manners to go late to a public entertainment; the bustle and noise incident to the late arrival is often a serious interference with the exercises of the occasion.

Upon entering the hall, secure a programme for each member of your party, and follow the usher to the designated seats. The gentleman will go first, and pause at the entrance, allowing the lady to pass into the seat, when he will follow.

Etiquette of Visiting.

WHEN, WHERE AND HOW TO VISIT.

BEFORE making a visit, you should be perfectly certain that your visit will be agreeable.

It is common for some people to be very cordial, and even profuse in their offers of hospitality. They unquestionably mean what they say at the time, but when they tender you an invitation to come and tarry *weeks*, it may seriously incommode them if you should pay them a visit of even a few *days*.

As a rule, a visit should never be made upon a general invitation. Should you visit a city where a friend resides, it will be best to go first to the hotel, unless you have a special invitation from the friend. From the hotel you will make a polite call, and if then you are invited, you can accept of the hospitality.

In all cases when you contemplate a visit, even with relatives, it is courtesy to write and announce your coming, giving, as nearly as possible, the day and exact time of your arrival.

An invitation to visit a friend should be answered as soon as may be; stating definitely when you will come, and how long you intend to stay.

When near your destination, it is well to send a prepaid telegram, stating upon what train you will arrive. As a reward for this forethought, you will probably find your friends waiting for you at the depot, and the welcome will be very pleasant.

What is Expected of the Guest when Visiting.

You are expected to pleasantly accept such hospitality as your friends can afford.

If no previous understanding has been had, the visit should be limited to three days, or a week at most.

You should make your visit interfere as little as possible with the routine work of the household in which you are a guest.

You should aim to conform your action, as much as may be, to the rules of the house, as to times of eating, retiring to rest, etc.

You should state upon your arrival how long you intend to stay, that your friends may arrange their plans to entertain accordingly.

Letters and papers being received in the presence of the host, hostess and others, the guest should ask to be excused while reading them.

Furnish your own materials in doing work for yourself when you are visiting, as much as possible, and never depend upon your entertainers.

A kind courtesy, while you remain, will be to execute some work representing your own skill, to be given the hostess as a memento of the occasion.

You should in shopping or transacting business, when you desire to go alone, select the hours of the day when your friends are engaged in their own duties.

The guest should beware of making unfavorable comment about the friends of the host and hostess, or of offering unfavorable criticism upon what they are known to favor or admire.

Should you happen to injure any article or other property while visiting, you should have the same immediately repaired, and, if possible, the article put in better condition than it was before.

You should not treat your friend's house as if it was a hotel, making your calls, visiting, transacting business about the town, and coming and going at all hours to suit your own convenience.

Never invite a friend who may call upon you to remain to dinner or supper. This is a right which belongs to the hostess, and it is for her to determine whether she wishes your guest to remain or not.

The guest should aim to render efficient assistance in case of sickness or sudden trouble at the house where the visit may be made. Oftentimes the best service will be rendered by considerately taking your leave.

Invitations accepted by the lady-guest should include the hostess, and those received by the hostess should include the guest. Thus, as much as possible, at all places of entertainment hostess and guest should go together.

While husbands and wives are always expected to accompany each other, where either may be invited, it is a trespass upon the generosity of the friend to take children and servants unless they are included in the invitation.

Never invite a friend who calls upon you into any other room than the parlor, unless it is suggested by the hostess that you do so. While you may have the right to enter various rooms, you have no authority for extending the privilege to others.

Immediately upon the return to your home, after paying a visit, you should write to your hostess, thanking her for hospitality and the enjoyment you received. You should also ask to be remembered to all of the family, mentioning each one by name.

Expenses which the friends may incur in removal and care of baggage, in repairs of wardrobe, or any other personal service requiring cash outlay, the guest should be careful to have paid. Washing and ironing should be sent elsewhere from the place where the guest is visiting.

The lady-guest should beware of receiving too many visits from gentlemen, and if invited to accompany them to places of amusement or on rides, she should consult with the hostess and learn what appointments she may have, and whether the going with others will be satisfactory to her.

Should a secret of the family come into your possession while on a visit, you should remember that the hospitality and privileges extended should bind you to absolute secrecy. It is contemptibly mean to become the possessor of a secret thus, and afterwards betray the confidence reposed in you.

Be careful that you treat with kindness and care servants, horses, carriages and other things at your friend's house which are placed at your disposal. To pluck choice flowers, to handle books roughly, to drive horses too fast, to speak harshly to servants—all this indicates selfishness and bad manners.

The visitor should beware of criticism or fault-finding with the family of the hostess. It is also in extremely bad taste for the guest to speak disparagingly of things about the home or the town where the visit is being made, being at the same time enthusiastic in praise of people and places elsewhere.

When a child is taken along, the mother should be very watchful that it does no injury about the house, and makes no trouble. It is excessively annoying to a neat housekeeper to have a child wandering about the rooms, handling furniture with greasy fingers, scattering crumbs over the carpets, and otherwise making disturbance.

The gentleman visitor should be certain that smoking is not offensive to the various members of the family, before he indulges too freely in the pipe and cigar about the house. For the guest, without permission, to seat himself in the parlor (Fig. 16), and scent the room with the fumes of tobacco, is a serious impoliteness.

When you can at times render assistance to those you are visiting, in any light work, you will often make your visit more agreeable. A lady will not hesitate to make her own bed if there be few or no servants, and will do anything else to assist the hostess. If your friend, however, declines allowing you to assist her, you should not insist upon the matter further.

Guests should enter with spirit and cheerfulness into the various plans that are made for their enjoyment. Possibly some rides will be had, and some visits made, that will be tiresome, but the courteous guest should find something to admire everywhere, and thus make the entertainers feel that their efforts to please are appreciated.

Of various persons in the family where the guest may be visiting, gifts may most appropriately be given to the hostess, and the baby or the youngest child. If the youngest has reached its teens, then it may be best to give it to the mother. The visitor will, however, use discretion in the matter. Flowers and fancy needle-work will always be appropriate for the lady. Confectionery and jewelry will be appreciated by the children. Small articles of wearing apparel or money will be suitable for servants who have been particularly attentive to the guest.

Special pains should be taken by guests to adapt themselves to the religious habits of those with whom they are visiting. If daily prayers are had, or grace is said at meals, the most reverent attention should be given; though when invited to participate in any of these exercises, if unaccustomed to the same, you can quietly ask to be excused. As a rule, it is courtesy to attend church with the host and hostess. Should you have decided preferences, and go elsewhere, do so quietly and without comment, and under no circumstances should there be allowed religious discussion afterwards. You visit the home of your friends to entertain and be entertained. Be careful that you so treat their opinions that they will wish you to come again.

Smoking Room.

Hints to the Host and Hostess.

Take the baggage-checks, and give personal attention to having the trunks conveyed to your residence, relieving the guest of all care in the matter.

Having received intelligence of the expected arrival of a guest, if possible have a carriage at the depot to meet the friend. Various members of the family being with the carriage will make the welcome more pleasant.

Have a warm, pleasant room especially prepared for the guest, the dressing-table being supplied with water, soap, towel, comb, hair-brush, brush-broom, hat-brush, pomade, cologne, matches, needles and pins. The wardrobe should be conveniently arranged for the reception of wearing apparel. The bed should be supplied with plenty of clothing, a side-table should contain writing materials, and the center-table should be furnished with a variety of entertaining reading matter.

Arrange to give as much time as possible to the comfort of the guest, visiting places of amusement and interest in the vicinity. This should all be done without apparent effort on your part. Let your friends feel that the visit is a source of real enjoyment to you; that through their presence and company you have the pleasure of amusements and recreation that would, perhaps, not have been enjoyed had they not come. Treat them with such kindness as you would like to have bestowed upon yourself under similar circumstances.

At the close of their stay, if you would be happy to have the visitors remain longer, you will frankly tell them so. If they insist upon going, you will aid them in every way possible in their departure. See that their baggage is promptly conveyed to the train. Examine the rooms to find whether they have forgotten any article that they would wish to take. Prepare a lunch for them to partake of on their journey. Go with them to the depot. Treat them with such kindness and cordiality to the close that the recollection of their visit will ever be a bright spot in their memory. Remain with them until the train arrives. They would be very lonely waiting without you. You will ever remember with pleasure the fact that you made the last hours of their visit pleasant. And thus, with the last hand-shaking, and the last waving of adieu, as the train speeds away, keep up the warmth of hospitality with your guests to the very end. It is, perhaps, the last time you will ever see them.

CONDUCT AT PLACES OF PUBLIC AMUSEMENT.

While a quiet conversation is allowable in the intervals after the opening of the performance, close attention should be given to the stage. Should it be a concert, the utmost stillness should be observed, as the slightest whisper will disturb the singers. This considerate attention should be given to the very end. It is in exceedingly bad taste, near the close of the last act, for the audience to commence moving about, putting on wraps and outer clothing, preparatory to leaving. Those who do so, lose the choicest part of the entertainment; they distract others who wish to be attentive, and they advertise the fact that they have no private carriage of their own, but on the contrary go by some public conveyance, and with characteristic selfishness they intend to rush out first and secure the best seats.

If the entertainment be a fancy fair, where goods which have been manufactured by a company of ladies are sold for church or charitable purposes, good sense will immediately suggest that as large a price should be realized as possible, and hence it is not etiquette for the purchaser to attempt to buy under price. It is also courtesy for the saleswoman, when a larger sum is presented than is charged, to deduct the price and promptly return the change, unless the surplus be donated to the charity.

Bad Manners.

Do not forget, while you make yourself comfortable, that others have rights which should be always considered.

Do not talk loudly, laugh boisterously, or make violent gestures.

Do not talk or whisper so loudly during the entertainment as to disturb those sitting near you.

Do not make a display of secrecy, mystery, or undue lover-like affection with your companion.

Do not prevent your companion from giving attention to the exercises, even though they may be without interest to yourself.

Do not, in a picture-gallery, stand conversing too long in front of pictures. Take seats, and allow others to make examination.

Do not, if a lady, allow a gentleman to join you, and thus withdraw your attention from your escort. And do not, if a gentleman, allow your attention to be taken up, to any great extent, with a lady other than the one you have in charge.

Do not, if a gentleman, be continually going from the hall between the acts of the play. To be passing up and down the aisle, eating peppers and cardamom seeds, advertises the fact that you are addicted to the too frequent use of liquors.

Do not join a party about to visit a place of amusement unless invited to do so. Should the party consist of one gentleman and two ladies, a gentleman, if well acquainted, may ask the privilege of attending one of the ladies. Should a ticket be furnished him, he should return the favor by an equal politeness bestowed upon the party, if possible, during the evening.

Courtship and Marriage.

CONDITIONS THAT PROMOTE HAPPINESS.

THE happiness of married life comes from pleasant, harmonious relations existing between husband and wife. If rightly mated in the conjugal state, life will be one continual joy. If unhappily wedded, the soul will be forever yearning, and never satisfied; happiness may be hoped for, may be dreamed of, may be the object ever labored for, but it will never be realized.

In view, therefore, of the great influence that marriage has upon the welfare and happiness of all those who enter the conjugal relation, it becomes the duty of everyone to study the laws which make happy, enduring companionships between husbands and wives. It is a duty which not only the unmarried owe themselves, but it is an obligation due to society, as the well-being of a community largely rests upon the permanent, enduring family relation.

Very properly does the highest civilization not only recognize one woman for one man, and one man for one woman, but it ordains that marriage shall be publicly solemnized; and in view of its sacred nature and its vast influence on the welfare of society, that its rights shall be jealously guarded, and that a separation of those who pledge themselves to each other for life shall be as seldom made as possible.

The young should, therefore, be thoroughly imbued with the idea that the marriage state may not be entered upon without due and careful consideration of its responsibilities, as explained in the introductory remarks found in the department devoted to "Love Letters."

The province of this chapter is to consider the etiquette of courtship and marriage, not its moral bearings; and yet we may in this connection very appropriately make a few suggestions.

Whom to Marry.

There are exceptions to all rules. Undoubtedly parties have married on brief acquaintance, and have lived happily afterwards. It is sometimes the case that the wife is much older than the husband, is much wiser, and much his superior in social position, and yet happiness in the union may follow. But, as a rule, there are a few fundamental requisites, which, carefully observed, are much more likely to bring happiness than does marriage where the conditions are naturally unfavorable.

Of these requisites, are the following:

Marry a person whom you have known long enough to be sure of his or her worth—if not personally, at least by reputation.

Marry a person who is your equal in social position. If there be a difference either way, let the husband be superior to the wife. It is difficult for a wife to love and honor a person whom she is compelled to look down upon.

Marry a person of similar religious convictions, tastes, likes and dislikes to your own. It is not congenial to have one companion deeply religious, while the other only ridicules the forms of religion. It is not pleasant for one to have mind and heart absorbed in a certain kind of work which the other abhors; and it is equally disagreeable to the gentle, mild and sweet disposition to be united with a cold, heartless, grasping, avaricious, quarrelsome person. Very truthfully does Luna S. Peck, in the "Vermont Watchman," describe one phase of inharmony, in the following poem:

MISMATED.

A HAWK once courted a white little dove,
With the softest of wings and a voice full of love;
And the hawk—O yes, as other hawks go—
Was a well-enough hawk, for aught that I know.
But she was a dove,
And her bright young life
Had been nurtured in love,
Away from all strife.

Well, she married the hawk. The groom was delighted;
A feast was prepared, and the friends all invited
(Does anyone think that my story's not true?
He is certainly wrong—the facts are not new.)
Then he flew to his nest,
With the dove at his side,
And soon all the rest
Took a squint at the bride.

A hawk for his father, a hawk for his mother,
A hawk for his sister, and one for his brother,
And uncles and aunts there were by the dozens,
And oh, such a number of hawks for his cousins!
They were greedy and rough—
A turbulent crew,
Always ready enough
To be quarrelsome, too.

To the dove all was strange; but never a word
In resentment she gave to the wrangling she heard.
If a thought of the peaceful, far-away nest
Ever haunted her dreams, or throbbed in her breast,
No bird ever knew;
Each hour of her life,
Kind, gentle and true
Was the hawk's dove-wife.

But the delicate nature too sorely was tried;
With no visible sickness, the dove drooped and died;
Then loud was the grief, and the wish all expressed
To call the learned birds, and hold an inquest.
So all the birds came,
But each shook his head·
No disease could he name
Why the dove should be dead,

'Till a wise old owl, with a knowing look,
Stated this: "The case is as clear as a book;
No disease do I find, or accident's shock;
The cause of her death was *too much hawk!*
Hawk for her father, and hawk for her mother,
Hawk for her sister, and hawk for her brother,
Was more than the delicate bird could bear;
She hath winged her way to a realm more fair!
She was nurtured a dove,
Too hard the hawk's life—
Void of kindness and love,
Full of hardness and strife."

And when he had told them, the other birds knew
That this was the cause, and the verdict was true!

Natural Selection.

In the first place, observation proves that selections made in nature by the beasts of the field and fowls of the air, of couples which pair, the male is always the strongest, generally the largest, the most brave, and always the leader. The female follows, trusting to her companion, leaving him to fight the heavy battles, apparently confident in his bravery, strength and wisdom.

If nature teaches anything, it is what observation and experience in civilized life has also proved correct, that of husband and wife, rightly mated, the husband should represent the positive—the physical forces, the intellectual and the strongly-loving; while the wife will represent the negative—the sympathetic, the spiritual, and the affectional. The husband should be so strong as to be a natural protector to his family. He should be brave, that he may defend his companion. He should be wise, and he should be so thoroughly true and devoted to his wife that he will delight in being her guardian and support.

The wife, confident in the husband's strength and wisdom, will thus implicitly yield to his protecting care. And thus both will be happy—he in exercising the prerogatives which belong naturally to the guardian and protector; and she in her confidence, love and respect for her companion, whom she can implicitly trust.

Peculiarities Suitable for Each Other.

Those who are neither very tall nor very short, whose eyes are neither very black nor very blue, whose hair is neither very black nor very red,—the mixed types—may marry those who are quite similar in form, complexion and temperament to themselves.

Bright red hair and a florid complexion indicate an excitable temperament. Such should marry the jet-black hair and the brunette type.

The gray, blue, black or hazel eyes should not marry those of the same color. Where the color is very pronounced, the union should be with those of a decidedly different color.

The very corpulent should unite with the thin and spare, and the short, thick-set should choose a different constitution.

The thin, bony, wiry, prominent-featured, Roman-nosed, cold-blooded individual, should marry the round-featured, warm-hearted and emotional. Thus the cool should unite with warmth and susceptibility.

The extremely irritable and nervous should unite with the lymphatic, the slow and the quiet. Thus the stolid will be prompted by the nervous companion, while the excitable will be quieted by the gentleness of the less nervous.

The quick-motioned, rapid-speaking person should marry the calm and deliberate. The warmly impulsive should unite with the stoical.

The very fine-haired, soft and delicate-skinned should not marry those like themselves; and the curly should unite with the straight and smooth hair.

The thin, long-face should marry the round-favored; and the flat nose should marry the full Roman. The woman who inherits the features and peculiarities of her father should marry a man who partakes of the characteristics of his mother; but in all these cases where the type is not pronounced, but is, on the contrary, an average or medium, those forms, features and temperaments may marry either.

Etiquette of Courtship.

But however suitable may be the physical characteristics, there are many other matters to be considered before a man and woman may take upon themselves the obligation to love and serve each other through life, and these can only be learned by acquaintance and courtship, concerning which the following suggestions may be appropriate:

Any gentleman who may continuously give special, undivided attention to a certain lady, is presumed to do so because he prefers her to others. It is reasonable to suppose that others will observe his action. It is also to be expected that the lady will herself appreciate the fact, and her feelings are likely to become engaged. Should she allow an intimacy thus to ripen upon the part of the gentleman, and to continue, it is to be expected that he will be encouraged to hope for her hand; and hence it is the duty of both lady and gentleman, if neither intends marriage, to discourage an undue intimacy which may ripen into love, as it is in the highest degree dishonorable to trifle with the affections of another. If, however, neither has objections to the other, the courtship may continue.

The Decisive Question.

At length the time arrives for the gentleman to make a proposal. If he is a good judge of human nature, he will have discovered long ere this whether his favors have been acceptably received or not, and yet he may not know positively how the lady will receive an offer of marriage. It becomes him, therefore, to propose.

What shall he say? There are many ways whereby he may introduce the subject. Among these are the following:

He may write to the lady, making an offer, and request her to reply. He may, if he dare not trust to words, even in her presence write the question on a slip of paper, and request her laughingly to give a plain "no" or "yes." He may ask her if in case a gentleman very much like himself was to make a proposal of marriage to her, what she would say. She will probably laughingly reply that it will be time enough to tell what she would say when the proposal is made. And so the ice would be broken. He may jokingly remark that he intends one of these days to ask a certain lady not a thousand miles away if she will marry him, and asks her what answer she supposes the lady will give him; she will quite likely reply that it will depend upon what lady he asks. And thus he may approach the subject, by agreeable and easy stages, in a hundred ways, depending upon circumstances.

Engaged.

An engagement of marriage has been made. The period of courtship prior to marriage has been passed by the contracting parties, doubtless pleasantly, and we trust profitably.

Let us hope that they have carefully studied each other's tastes, that they know each other's mental endowments, and that by visits, rides and walks, at picnics, social gatherings and public entertainments, they have found themselves suited to each other.

Upon an engagement being announced, it is courtesy for various members of the gentleman's family, generally the nearest relatives, to call upon the family of the lady, who in turn should return the call as soon as possible. Possibly the families have never been intimate; it is not necessary that they should be so, but civility will demand the exchange of visits. If the betrothed live in different towns, an exchange of kind and cordial letters between the families is etiquette, the parents or near relatives of the gentleman writing to the lady or her parents.

A present of a ring to the lady, appropriately signalizes the engagement of marriage. This is usually worn on the fore-finger of the left hand. If the parties are wealthy, this may be set with diamonds; but if in humble circumstances, the gift should be more plain. Other presents by the gentleman to the lady, of jewelry, on birthdays, Christmas or New Year's, will be very appropriate; while she, in turn, may reciprocate by gifts of articles of fancy-work made with her own hands.

Aside from the engagement-ring, a gentleman should not, at this period of acquaintance, make expensive presents to his intended bride. Articles of small value, indicative of respect and esteem, are all that should pass between them. Should the marriage take place, and coming years of labor crown their efforts with success, then valuable gifts will be much more appropriate than in the earlier years of their acquaintance.

Arrangements for a Permanent Home.

It remains to be seen whether the intended husband will prove a financial success or not. He may be over benevolent; he may be too ready to become security for others; he may prove a spendthrift; he may lose his property in a variety of ways. It is therefore wise for the lady and her friends to see that, previous to the marriage, if she have money in her own right, a sufficient sum be settled upon her to provide for all contingencies in the future. This is a matter that the gentleman should himself insist upon, even using his own money for the purpose, as many a man has found, when his own fortune was wrecked, the provision made for his wife to be his only means of support in declining years.

Conduct During the Engagement.

An engagement having been made, it is desirable that it be carried to a successful termination by marriage. To do this, considerable depends upon both parties.

The gentleman should be upon pleasant terms with the lady's family, making himself agreeable to her parents, her sisters and her brothers. Especially to the younger members of her family should the gentleman render his presence agreeable, by occasional rides and little favors, presents of sweetmeats, etc.

He should also take pains to comply with the general regulations of the family during his visits, being punctual at meals, and early in retiring; kind and courteous to servants, and agreeable to all.

He should still be gallant to the ladies, but never so officiously attentive to anyone as to arouse uneasiness upon the part of his affianced. Neither should he expect her to eschew the society of gentlemen entirely from the time of her engagement.

The lady he has chosen for his future companion is supposed to have good sense, and while she may be courteous to all, receiving visits and calls, she will allow no flirtations, nor do anything calculated to excite jealousy on the part of her fiancé.

The conduct of both after the engagement should be such as to inspire in each implicit trust and confidence.

Visits should not be unduly protracted. If the gentleman makes them in the evening, they should be made early, and should not be over two hours in length. The custom of remaining until a late hour has passed away in genteel society. Such conduct at the present time, among the acquaintance of the lady, is certain to endanger her reputation.

For the gentleman and lady who are engaged to isolate themselves from others when in company, or do anything that shall attract the attention of the company to themselves, is in bad taste. Such conduct will always call forth unfavorable comments. The young ladies will sneer at it from jealousy, the young men will pronounce it foolish, and the old will consider it out of place.

And yet, by virtue of engagement, the gentleman should be considered the rightful escort, and upon all occasions the lady will give him preference; and he will especially see, however thoughtful he may be of others, that her wants are carefully attended to.

Should a misunderstanding or quarrel happen, it should be removed by the lady making the first advances towards a reconciliation. She thus shows a magnanimity which can but win admiration from her lover. Let both in their conduct towards the other be confiding, noble and generous.

The Wedding.

The wedding-day having arrived, the presents for the bride, if there be any, which may be sent at any time during the previous week, will be handsomely displayed before the ceremony. The presents, which have the names of the donors attached, are for the bride—never the bridegroom, although many of them may be sent by friends of the latter.

The form and ceremony of the wedding will be as various as are the peculiarities of those who marry, and comprise every description of display, from the very quiet affair, with but a few friends present, to the elaborate occasion when the church is filled to repletion, or in the palatial residence of the father of the bride, "the great house filled with guests of every degree."

We will suppose that the parties desire a somewhat ostentatious wedding, and the marriage takes place in church. In arranging the preliminaries, the bride may act her pleasure in regard to bridesmaids. She may have none; she may have one, two, three, four, six or eight; and, while in England it is customary to have but one groomsman, it is not uncommon in the United States to have one groomsman for every bridesmaid.

The bridegroom should make the first groomsman the manager of affairs, and should furnish him with money to pay necessary expenses.

Ushers are selected from the friends of the bride and groom, who, designated by a white rosette worn on the left lapel of the coat, will wait upon the invited guests at the door of the church, and assign them to their places, which will be a certain number of the front seats.

The bridegroom should send a carriage at his expense for the officiating clergyman and his family. He is not expected to pay for the carriage of the parents of the bride, nor for those occupied by the bridesmaids and groomsmen.

The latter will furnish the carriages for the ladies, unless otherwise provided. The invited guests will go in carriages at their own expense.

The clergyman is expected to be within the rails, and the congregation promptly in their seats, at the appointed hour. The bridegroom will proceed to the church, accompanied by his near relatives, and should precede the bride, that he may hand her from the carriage, if not waited upon by her father or other near relative.

The bride goes to the church in a carriage, accompanied by her parents, or those who stand to her in the relation of parents (as may other relatives, or legal guardian), or she may be accompanied by the bridesmaids.

When the bridal party is ready in the vestibule of the church, the ushers will pass up the center aisle, the first groomsman, accompanied by the first bridesmaid, coming next, the others following in their order. The groom walks next with the bride's mother upon his arm, followed by the father with the bride. At the altar, as the father and mother step back, the bride takes her place upon the left of the groom.

Another mode of entering the church is for the first bridesmaid and groomsman to lead, followed by the bride and groom. When in front of the altar, the groomsman turns to the right, the bridesmaid to the left, leaving a space in front of the minister for the bride and groom; the near relatives and parents of the bride and groom follow closely, and form a circle about the altar during the ceremony.

The former mode is, however, established etiquette. At the altar the bride stands at the left of the groom, and in some churches both bride and groom remove the right-hand glove. In others it is not deemed necessary. When a ring is used, it is the duty of the first bridesmaid to remove the bride's left-hand glove. An awkward pause is, however, avoided by opening one seam of the glove upon the ring finger, and at the proper time the glove may be turned back, and the ring thus easily placed where it belongs, which is the third finger of the left hand.

The responses of the bride and groom should not be too hastily nor too loudly given.

Following the ceremony, the parents of the bride speak to her first, succeeded by the parents of the groom before other friends.

Essentially the same ceremonies will be had, the same positions will be assumed, and the same modes of entering will be observed, in the parlors at the residence, as at the church.

The bride and groom, after the ceremony, will go in the same carriage from the church to the home or to the depot.

Should a breakfast or supper follow the ceremony, the bride will not change her dress until she assumes her traveling apparel. At the party succeeding the ceremony, the bridesmaids and groomsmen should be invited, and all may, if they prefer, wear the dresses worn at the wedding.

The Wedding Trousseau.

It is customary, at the wedding, for the young bride to wear only pure white, with a wreath of orange flowers to adorn the full veil of lace. The widow or elderly lady will wear pearl color or tinted silk, without wreath or veil. The bridesmaid of the youthful bride may wear colors, but a very beautiful effect is produced by pure white, with colored trimmings. In some cases, one-half of the bridesmaids will wear one color, and the other half another color. No black dresses should be worn by the guests. Any in mourning may, for the time, wear purple, lavender, iron-gray and other quiet colors.

The bridegroom and groomsmen will wear white gloves, vest and neckties.

The bride's traveling dress should be very quiet and modest, and not such as in any way to attract attention.

Only the bridegroom is congratulated at the wedding; it is he who is supposed to have won the prize. Acquaintances of both should speak to the bride first; but if acquainted with but one, they will address that one first, when introductions will take place.

At the wedding breakfast or supper the bride sits by the side of her husband, in the center of the table, at the side; her father and mother occupy the foot and head of the table, and do the honors of the occasion, as at the dinner-party.

The festivities of the occasion being over, and the hour of departure having arrived, the guests disperse, it being etiquette for them to make a formal call on the mother of the bride in the succeeding two weeks.

Etiquette Between Husbands and Wives.

Let the rebuke be preceded by a kiss.

Do not require a request to be repeated.

Never should both be angry at the same time.

Never neglect the other, for all the world beside.

Let each strive to always accommodate the other.

Let the angry word be answered only with a kiss.

Bestow your warmest sympathies in each other's trials.

Make your criticism in the most loving manner possible.

Make no display of the sacrifices you make for each other.

Never make a remark calculated to bring ridicule upon the other.

Never deceive; confidence, once lost, can never be wholly regained.

Always use the most gentle and loving words when addressing each other.

Let each study what pleasure can be bestowed upon the other during the day.

Always leave home with a tender good-bye and loving words. They may be the last.

Consult and advise together in all that comes within the experience and sphere of each individually.

Never reproach the other for an error which was done with a good motive and with the best judgment at the time.

The Wife's Duty.

Never should a wife display her best conduct, her accomplishments, her smiles, and her best nature, exclusively away from home.

Be careful in your purchases. Let your husband know what you buy, and that you have wisely expended your money.

Let no wife devote a large portion of her time to society-work which shall keep her away from home daytimes and evenings, without the full concurrence of her husband.

Beware of entrusting the confidence of your household to outside parties. The moment you discuss the faults of your husband with another, that moment an element of discord has been admitted which will one day rend your family circle.

If in moderate circumstances, do not be over ambitious to make an expensive display in your rooms. With your own work you can embellish at a cheap price, and yet very handsomely, if you have taste. Let the adornings of your private rooms be largely the work of your own hands.

Beware of bickering about little things. Your husband returns from his labors with his mind absorbed in business. In his dealings with his employes, he is in the habit of giving commands and of being obeyed. In his absent-mindedness, he does not realize, possibly, the change from his business to his home, and the same dictatorial spirit may possess him in the domestic circle. Should such be the case, avoid all disputes. What matters it where a picture hangs, or a flower-vase may sit. Make the home so charming and so wisely-ordered that your husband will gladly be relieved of its care, and will willingly yield up its entire management to yourself.

Be always very careful of your conduct and language. A husband is largely restrained by the chastity, purity and refinement of his wife. A lowering of dignity, a looseness of expression and vulgarity of words, may greatly lower the standard of the husband's purity of speech and morals.

Whatever may have been the cares of the day, greet your husband with a smile when he returns. Make your personal appearance just as beautiful as possible. Your dress may be made of calico, but it should be neat. Let him enter rooms so attractive and sunny that all the recollections of his home, when away from the same, shall attract him back.

Be careful that you do not estimate your husband solely by his ability to make display. The nature of his employment, in comparison with others, may not be favorable for fine show, but that should matter not. The superior qualities of mind and heart alone will bring permanent happiness.

To have a cheerful, pleasant home awaiting the husband, is not all. He may bring a guest whom he desires to favorably impress, and upon you will devolve the duty of entertaining the visitor so agreeably that the husband shall take pride in you. A man does not alone require that his wife be a good housekeeper. She must be more; in conversational talent and general accomplishment she must be a companion.

The Husband's Duty.

A very grave responsibility has the man assumed in his marriage. Doting parents have confided to his care the welfare of a loved daughter, and a trusting woman has risked all her future happiness in his keeping. Largely will it depend upon him whether her pathway shall be strewn with thorns or roses.

Let your wife understand fully your business. In nearly every case she will be found a most valuable adviser when she understands all your circumstances.

Do not be dictatorial in the family circle. The home is the wife's province. It is her natural field of labor. It is her right to govern and direct its interior management. You would not expect her to come to your shop, your office, your store or your farm, to give orders how your work should be conducted; neither should you interfere with the duties which legitimately belong to her

If a dispute arises, dismiss the subject with a kind word, and do not seek to carry your point by discussion. It is a glorious achievement to master one's own temper. You may discover that you are in error, and if your wife is wrong, she will gladly, in her cooler moments, acknowledge the fault

Having confided to the wife all your business affairs, determine with her what your income will be in the coming year Afterwards ascertain what your household expenses will necessarily be, and then set aside a weekly sum, which should regularly and invariably be paid the wife at a stated time. Let this sum be even more than enough, so that the wife can pay all bills, and have the satisfaction besides of accumulating a fund of her own, with which she can exercise a spirit of independence in the bestowal of charity, the purchase of a gift, or any article she may desire. You may be sure that the wife will very seldom use the money unwisely, if the husband gives her his entire confidence.

Your wife, possibly, is inexperienced; perhaps she is delicate in health, also, and matters that would be of little concern to you may weigh heavily upon her. She needs, therefore, your tenderest approval, your sympathy and gentle advice. When her efforts are crowned with success, be sure that you give her praise. Few husbands realize how happy the wife is made by the knowledge that her efforts and her merits are appreciated. There are times, also, when the wife's variable condition of health will be likely to make her cross and petulant; the husband must overlook all this, even if the wife is at times unreasonable.

Endeavor to so regulate your household affairs that all the faculties of the mind shall have due cultivation. There should be a time for labor, and a time for recreation. There should be cultivation of the social nature, and there should be attention given to the spiritual. The wife should not be required to lead a life of drudgery. Matters should be so regulated that she may early finish her labors of the day, and the good husband will so control his business that he may be able to accompany his wife to various places of amusement and entertainment Thus the intellectual will be provided for, and the social qualities be kept continually exercised.

The wise husband will provide for the moral and spiritual growth of his family by regular attendance at church; the spiritual faculties of our nature are given for a beneficent purpose; their exercise and cultivation leads up into the higher and the better; one day in seven, at least, should therefore be set apart for the spiritual improvement of the family. Select a church, the religious teaching in which is nearest in accord with the views of yourself and wife, and be regular in your attendance; accompany your wife; give her the pleasure of your escort; see that she is provided with a good seat and all the advantages which the church has to give; enter fully and freely into the religious work of your church, and your family will be blessed in consequence.

Give your wife every advantage which it is possible to bestow. Shut up with her household duties, her range of freedom is necessarily circumscribed, and in her limited sphere she is likely to remain stationary in her intellectual growth. Indeed, oftentimes, if her family be large and her husband's means are limited, in her struggle to care for the family she will sacrifice beauty, accomplishments, health—life, almost—rather than that her husband shall fail. In the meantime, with wide opportunities and intellectual advantages, he will be likely to have better facilities for growth and progression. There is sometimes thus a liability of the husband and wife growing apart, an event which both should take every pains to avert. In avoiding this, much will depend upon the wife. She must resolutely determine to be in every way the equal of her companion. Much also will depend upon the husband. The wife should have every opportunity whereby she may keep even pace with him.

Possibly the wife in social position, intellectual acquirement, and very likely in moral worth, may be superior to her husband. It is equally necessary, therefore, that the husband put forth every effort to make himself worthy of his companion. It is a terrible burden to impose on a wife to compel her to go through life with a man whom she cannot love or respect.

ETIQUETTE OF TRAVELING.

THE reader will call to mind people who always appear at ease when they are traveling. Investigation will prove that these individuals have usually had a wide experience in journeying, and an extensive acquaintance with the world. The experienced traveler has learned the necessity of always being on time, of having baggage checked early, of purchasing a ticket before entering the cars, and of procuring a seat in a good location before the car is full.

The inexperienced traveler is readily known by his flurry and mistakes. He is likely to be behind time, and he is likely to be an hour too early. For want of explicit direction, his baggage often fails to reach the train in time, or does not come at all. His trunks, from lack of strength, are liable to be easily broken. In his general confusion, when he buys a ticket he neglects to place it where it will be secure, and consequently loses it. He forgets a portion of his baggage, and thus in a dozen ways he is likely to be in trouble.

If the person be a lady who is unacquainted with travel, she reveals the fact by a general impatience, restlessness, and absent-mindedness. In her want of self-possession she forgets several things she had intended to bring, and her continual fault-finding at flies, dust, heat, delay and other trials, all betray the fact that she has not heretofore been accustomed to these difficulties.

Railway Station.

The following suggestions relating to railway traveling may be of service:

Whenever you contemplate a journey, consider carefully what route you want to take, and decide it definitely. Learn accurately what time the train leaves, and provide yourself with a table giving the running time of the road, stations on the way, etc., which will save you the trouble of asking many questions.

If you desire to ride in a sleeping-car, secure your berth a day or two previous to the time of going, in order that you may be in time to take your choice. The most desirable sections are in the center of the car, away from the annoyance of dust, drafts of air and sudden noises resulting from opening and closing doors.

At least a day before you go, consider carefully what baggage you need to take, and have it packed. Take just as little as possible. Have your trunks very secure, and pack all articles of baggage in such a manner that they cannot shake and thus be broken.

Provide among your baggage necessary toilet articles—a linen wrap to exclude the dust from your finer clothing, and a small amount of reading-matter with very coarse type. See that your baggage is perfectly in order, and an hour before you start engage an authorized expressman to take your baggage to the depot. State very distinctly where you want the baggage taken, and for what train. It is also a wise provision to have your trunk labeled with a card bearing your name and destination.

Take the number of the expressman, ascertain his charge, and withhold payment until he has assisted in finding baggage, and has aided in getting it checked at the depot. Be very sure that your watch or clock is perfectly correct with railroad time, and that you, half an hour before the starting time of the train, arrive at the depot, buy a ticket, and take your seat in the car. You are probably early enough to take your choice of location in the seats.

If in the summer time, and the train runs east or west, the north side will probably be most pleasant. Seats midway in the car are easiest to ride in, and the left side is freest from sudden gusts of wind which may come in at the open doors.

Having selected a seat, it is customary to deposit the satchel, umbrella or some article of wearing-apparel in the same, should you not be ready to occupy it; and it is etiquette for anyone finding a seat so occupied to look further.

You should carry just as little baggage into the car as possible, and all separate pieces should have your name plainly written or printed upon them, which will secure their being forwarded to you in case they are left upon the seat.

Having paid for one ticket, you are entitled to only one seat. It shows selfishness, therefore, when the coach is quite full to deposit a large amount of baggage in the surrounding seats and occupy three or four, and engage in reading, while others look in vain for a place to sit down.

Etiquette in Church.

Suggestions Concerning Conduct Appropriate In the House of Worship.

The Stillness, Order and Reverence Due the Place and Occasion.

A CHURCH should be entered with a most reverent feeling. The object of attending divine service is to improve the spiritual nature, and hence business and everything of a secular character should be left behind when you enter the church portals.

If a stranger, you will wait in the vestibule until the arrival of the usher, who will conduct you to a seat.

Enter the church quietly, removing the hat, and never replacing it until the door is reached again at the close of the service.

If a stranger and accompanied by a lady, you will precede her, and follow the usher up the aisle until the pew is reached, when you will pause, allow her to pass in, and you will follow, taking seats at the further end if you are first, so that you will not be disturbed by later arrivals. It is no longer a custom, as formerly, for the gentleman to step into the aisle and allow ladies that are strangers to pass to the inside.

The gentleman will place his hat, if possible, under the seat, and while in church the occupant should avoid making a noise, staring around the building, whispering, laughing or nodding to others.

All greetings, recognitions and conversation should be conducted in the vestibule after service. While in church, the passage of a fan or hymn-book to another should be recognized by merely a quiet bow.

Should you see a stranger waiting, you may invite him to enter your pew. No speaking is necessary then, nor when you open the book and point out the service.

If a stranger, it is best to conform to the rules of the service, rising and sitting down with the congregation; and, although the forms may be radically different from what you are accustomed to, you should comport yourself with the utmost attention and reverence.

Avoid making a noise when entering a church after the services have commenced. It is disrespectful to come late, and shows bad manners to leave before the service is through. You should wait until the benediction is pronounced before you commence putting your articles in order for leaving.

It is a breach of etiquette for a number of young men to congregate in the vestibule and there carry forward a conversation, commenting upon the services and various members of the congregation present.

If a member of a church, you should be regular in attendance. While the pastor has put forth, possibly, extra effort to prepare an effective sermon, it is poor encouragement to find members of the congregation absent because of a trivial storm, away upon the pleasure drive, or absorbed in the contents of the Sunday paper.

TREATMENT OF EMPLOYES.

IT TAKES every grade of society to make the complete whole. One class is just as necessary as the other. In carrying forward great enterprises, how plainly do we see this manifested. Take the building of a railroad as an illustration:

A certain grade of mind is essential to prepare the road-bed and lay the track. This class of men must have strong physical natures, and the qualities that give the necessary force and energy to hew down rocks, tunnel mountains and remove all obstructions. Another class will act as foremen of the laborers, another will serve as engineers, another is fitted to act as officers, while still another grade of mind projected the enterprise and furnished the means for carrying it to a successful conclusion.

As in the materials that enter into the erection of the building, the foundation stones that support the superstructure down deep in the earth, while they are never seen, are nevertheless just as essential to the completion of the building as are the ornamental capstones above the windows; so, in associated labor, each grade of mind does its appropriate work. We could not dispense with either, and all should have due praise.

Each class being thus dependent one upon the other, all should labor in harmony together. The workman should guard his employer's interest. He should always be promptly on time and faithful to the last hour. He should make his work a study; he should give it thought, as thereby he renders his services so much the more valuable, and his compensation in the end so much better. Probably, if faithful, he may succeed to the business of his employer; or may enter a separate field. It is certain, at any rate, if he proves himself a competent assistant he is the more likely in time himself to become a manager of others.

The employer, through kind and pleasant manner, may do much toward making the subordinate worthy and competent. The workman should thoroughly understand what the duty is which he is expected to perform, and he should be required pleasantly yet firmly to execute it to the letter. When once there is a definite understanding on his part as to what is explicitly required, it is not necessary that an employer use harsh means or a manner in any way discourteous in order to secure obedience to his commands. A word of encouragement will increase the harmony.

Kindness to the Erring.

A PLEA FOR THE UNFORTUNATE.

AN officer of the law you may be, and it becomes you to care for the prisoner in your charge. While law should be enforced, for the good of the criminal as well as the protection of society, it does not become you to be unkind. Perhaps investigation may prove that your prisoner is innocent and has been wrongly arrested. But if guilty, at most he is simply unfortunate. He had no power to say what qualities of mind he should inherit, what his temperament should be, or what training he should receive in infancy; all of which are usually determining causes that fix man's destiny in after-life.

He stands before you largely the victim of unfortunate circumstances. He lacks the moral strength which others possess, and hence his weakness and his errors. True, he must pay the penalty of his transgression, but you can temper the administration of your government with such justice as will tend to the improvement and, possibly, the reformation of the criminal. Whatever the conduct of the prisoner, you should always rise superior to the feelings of passion or revenge.

In a thousand ways our paths in life will be crossed by those who commit errors. It will be easy to find fault; it will be natural to blame. But we must never forget that further back, far beyond our sight, lie causes that tended to produce these results.

Well may the mother look with deep anxiety upon the infant, wondering what destiny lies before it. Alas! that a mother's hopes and prayers often do not avail. Drifted away from parental control, the footsteps fall amid temptation, and a life of sorrow is the result.

We should never forget, in our treatment of the erring, that, were the mother present, she would plead with us to deal gently with her child. Very touchingly does the following poem ask that we be lenient for her sake:

Some Mother's Child.

AT home or away, in the alley or street,
Whenever I chance in this wide world to meet
A girl that is thoughtless, or a boy that is wild,
My heart echoes sadly, "'T is some mother's child!"

And when I see those o'er whom long years have rolled,
Whose hearts have grown hardened, whose spirits are cold—
Be it woman all fallen, or man all defiled,
A voice whispers sadly, "Ah! some mother's child!"

No matter how far from the right she hath strayed;
No matter what inroads dishonor hath made;
No matter what element cankered the pearl—
Though tarnished and sullied, she's some mother's girl.

No matter how wayward his footsteps have been;
No matter how deep he is sunken in sin;
No matter how low is his standard of joy—
Though guilty and loathsome, he's some mother's boy.

That head hath been pillowed on tenderest breast;
That form hath been wept o'er, those lips have been pressed;
That soul hath been prayed for in tones sweet and mild;
For her sake deal gently with "some mother's child."

WHILE error must be deplored and virtue ever commended, we should deal carefully and considerately with the erring, ever remembering that a myriad of untoward circumstances are continually weaving a network around the individual, fettering and binding a soul that otherwise would be white and pure.

It is a most fortunate circumstance for the child to be born of an excellent parentage, to be reared amid kindness, and to be guided in youth by wise counsels. Given all these favoring circumstances, and the chances are that the pathway in life will be honorable. Deprived of these advantages, the individual is likely to fall short in excellence in proportion as the circumstances have been unfavorable.

There are those who seemingly have only a smooth pathway in life. They were so fortunate as to be born with an excellently balanced organization of mind. They have no passion unduly in excess. They have no abnormal longings, no eccentricities, no weaknesses. Roses strew their way, and they live a life well rounded out and full of honor.

But while there are those who are apparently exempt from temptation, all are not so fortunate in ability, in strength of purpose and in power of will which may enable them to resist evil. Some are liable to easily err, and it will take, possibly, but a trivial circumstance to carry them aside. In the transgression they will get their punishment—they will suffer sufficiently. It does not become the more fortunate, therefore, to take too much credit to themselves for being more virtuous and free from error. It is vastly more noble and charitable to extend sympathy and compassion. This sentiment is well expressed in the following poem, by Millie C. Pomeroy:

You Had a Smooth Path.

ONE morning, when I went to school,
In the long-vanished Yesterday,
I found the creek had burst its banks,
And spilled its waters o'er my way.
The little path was filled with mud,
I tried to cross it on a log,
My foot slipped, and I, helpless, fell
Into a mass of miry bog.

My clothes were pitiful to see;
My hands and face were covered quite.
The children laughed right heartily,
And jeered me when I came in sight.
Sweet Jessie Brown, in snow-white dress,
Stood, smiling, by the teacher's desk,
The while he, gravely as he might,
Inquired the secret of my plight.

Then Jessie shook her snow-white dress,
And said, "What will you give to me
For coming here so nice and clean?
My very shoes from dirt are free."
The tutor frowned, and answered her,
"You merit no reward to-day;
Your clothes and hands are clean, because
You had a smooth path all the way."

And so, I think, when children grown
Are white in grace or black with sin,
We should not judge until we know
The path fate had them travel in;
For some are led on sunny heights,
Beyond the power of Sin to sway;
While others grope in darksome paths,
And face temptation all the way.

LENGTH OF IMPORTANT RIVERS THROUGHOUT THE WORLD.

NAME OF RIVER.	LENGTH	COUNTRY IN WHICH LOCATED.	WHERE IT RISES.	WHERE IT EMPTIES.
Aar	170	Switzerland		River Rhine
Aconcagua		Chili, S. A.	Aconcagua Mt.	Pacific Ocean
Adelaide	60	Australia	N. W. Australia	Adam Bay
Adege	250	Italy and Austria	Alps of Tyrol	Adriatic Sea
Adour	180	France	Upper Pyrenees	Bay of Biscay
Alabama	210	Alabama	Montg'ery Co., Ala.	Mobile River
Albany	400	British America	Cat Lake	Hudson's Bay
Aldan	900	Siberia	Aldan Mts	Lena River
Alleghany	400	Pennsylvania	Alleghany Mts	Monongahela R.
Aller	150	Germany		River Weser
Allier	220	France	Lozere Mts	River Loire
Altamaha	140	Georgia		Atlantic Ocean
Aluta	341	Roumania		River Danube
Amazon	3944	Peru, Ecua. and Brazil	Andes Mts	Atlantic Ocean.
American	30	California	El Dorado Co., Cal.	Sacramento Riv
Amoor	2200	Eastern Asia	Irkutsk—Mongolia	Sea of Okhotz
Anabara	400	Siberia	Gov't of Tobolsk	Arctic Ocean
Anadyr	450	Siberia	Lake Ivachno	N. Pac. Ocean
Anamirapuca	200	Brazil	Prov. of Para	River Amazon
Androscoggin	140	New Hamp. and Me.	New Hampshire	Kennebec River
Angermann	240	Sweden	Pr. of W. Nordland	Gulf of Bothnia
Annapolis	60	Nova Scotia	Annapolis Co.	Bay of Fundy
Apalachicola	90	Florida		Gulf of Mexico
Appomattox	120	Virginia	Appomattox Co., Va.	James River
Apure	735	Venezuela	Andes Mts	Orinoco River
Apurimac	165	Peru	Cayloma Mts	Mantaro River
Araguay	1300	Brazil	Lat. 19° s.	River Amazon
Aracan	200	Burmah and Aracan	Burmah	Gulf of Bengal
Aras (Araxes)	425	Persia	near Erzerum	River Kur
Arguaia	900	Brazil	Sierra Seltada	Tocantins River
Arkansas	2170	Utah, Ind. Ter., Col.	Rocky Mountains	Mississippi River
Arno	140	Italy	Mt. Falterona	Med. Sea
Arno	150	Italy	Appenine Mts	Med. Sea
Aroostook	120	Maine	Piscataquis Co., Me.	St. John's R., N. B
Arauca	500	Venezuela	Andes Mts	Orinoco River
Assiniboine	400	British N. America		Lake Winnipeg.
Atbara	270	Nubia, Africa		River Nile
Athabasca	800	British N. America	Rocky Mts	Athabasca Lake
Atrato	200	U. S. of Colombia		Gulf of Darien
Aube	90	France	Dep. of Haute-Marne	River Seine
Avoca	130	Australia (Victoria)		Indian Ocean
Avon	100	England	Northamptonshire	River Severn
Awaltara	230	Nicaraugua		
Back's	400	British N. America	Lake Beechy	Arctic Ocean
Barrow	90	Ireland	Queen's Co.	Waterford Har.
Batiscan	200	Prov. of Quebec, Can.		Riv. St. Lawrence
Bear (or Utah)	400	Utah	Lat. 41° N. Lon. 111° W.	Great Salt Lk.
Becancour	70	Prov. of Quebec, Can.		Riv. St Lawrence
Beni		Bolivia, S. A.	Eastern Andes	Mamore River
Big Black	200	Mississippi	Choctaw Co., Miss.	Mississippi Riv.
Big Horn, or Wind	400	Wyoming Ter.	Yellowstone Park	Yellowstone Riv
Big Sandy	80	Tennessee	Western Tenn.	Tennessee River
Big Sioux	150	Dakota	Sisseton Res., Dak.	Niobrara Riv.
Biobio	200	Chili, S. A.	Andes Mts	Pacific Ocean
Bitter Root	110	Montana	Rocky Mts	Clark's Fork
Black	375	Arkansas—Missouri	S. E. Missouri	White River
Black	125	New York	Herkimer Co., N. Y.	Lake Ontario
Black Elster	105	Germany	Saxony	River Elbe
Bl'k Warrior	150	Alabama	Walker Co., Ala.	Tombigbee Riv.
Blackwater	100	Ireland	Kerry Co.	Youghal Harbor
Blue	150	Kansas		Kansas River
Blue Nile	800	Africa and Nubia	Abyssinian Mts	River Nile
Bonnechere	110	Prov. of Ont., Can.		Ottawa River
Brahmapootra	1500	Asia	Upper Assam	Bay of Bengal
Brazos	900	Texas	Bexar Co., Tex.	Gulf of Mexico
Brenta	112	North Italy	Tyrol Mountains	Adriatic Sea
Bug	300	Russia	Galicia	River Vistula
Barnt	100	Oregon	Blue Mts	Snake River
Boyne	65	Ireland	Kildare Co.	Irish Sea
Cabul	320	Afghanistan		River Indus
Cahawba	100	Alabama	Jefferson Co., Ala.	Alabama River
Calfpasture	100	Virginia	Alleghany Mts	James River
Canadian	900	New Mex. and Texas	Guadalupe Mts	Arkansas River
Cape Fear	200	North Carolina	Haw and Deep Rivs.	Atlantic Ocean
Caroni	520	Venezuela	Parime Mts	Orinoco River
Carson	150	Nevada	Sierra Nevada Mts.	Carson Lake
Casanore	180	U. S. of Colombia	Mountains of Chita	River Meta
Cassiquiare	130	Venezuela	Orinoco River	Negro River
Catawba, or Wateree	250	N. and S. Carolina	Blue Ridge Mts	Santee River
Cauca	600	New Granada	Andes	Magdalena Riv.
Cauten, (or Imperial)	180	Chili	Western Andes	S. Pacific Ocean
Cauto	70	Cuba, W. I.		Bay of Buena Esperanza
Cavery	470	Hindostan	Prov. of Coorg	Indian Ocean
Charente	200	France	Dep't Haute Vienne	Atlantic Ocean
Chariton	250	Iowa and Missouri	Iowa	Missouri River
Chateauguay		Prov. of Quebec, Can.		Riv St Lawrence
Chattahoochee	550	Georgia and Ala.	Habersham Co., Ga	Apalachola Riv.
Chaudiere	120	Prov. of Quebec, Can	U. S. and Can. b'd'ry	Riv St Lawrence
Cheat		W. Virginia	Pocahontas C. W. V.	Monongahela R.
Chelalem	125	Oregon	Lewis Co., Ore.	Gray's Harbor
Chenango	90	New York	Oneida Co., N. Y.	Susquehanna R.
Chenaub	700	Asia		River Ghara
Cher	190	France	Dep't of Creuse	River Loire
Chingua	1150	Brazil	Diamantin Mt.	River Amazon
Chippewa	200	Wisconsin	N. Wisconsin	Mississippi R.
Choctawhatchee		Alabama and Florida	Barbour Co., Ala.	Choctawhatchee Bay
Choloteca	150	Honduras, C. A.		Fonseca Bay
Choo-Chiang	1100	China	Nan-ling Mts	China Sea
Choptauk	100	Delaware and Maryl'd.	Kent Co., Del.	Chesapeake Bay
Chuapa	125	Chili, S. A.	Western Andes	Pacific Ocean
Churchill	800	British America	Lake Methy	Hudson's Bay
Clarion	130	Pennsylvania	McKean Co.	Alleghany River
Clarke's, or Flathead,	650	Washington Ter.	Rocky Mts	Columbia River
Clifty	50	Indiana	Rush Co.	White River
Clinch	200	Virginia and Tenn.	S. W. Virginia	Tennessee River
Clyde	110	Scotland	Lanarkshire	Atlantic Ocean
Coal River	60	Virginia	Fayette Co., Va	Kanawha River
Coari	285	Brazil	Pr. Alto Amazonas.	River Amazon
Coco	350	Nicaragua		
Colorado	900	Argentine Rep., S. A.	Andes Mts	Atlantic Ocean
Colorado	900	Texas	San Saba Mts	Matagorda Bay
Colorado	2000	Utah, Wy. Ter. and California	S. E. Utah	G'f of California
Columbia	1400	Oregon, Wash. Ter., B. N. A.	Rocky Mts	Pacific Ocean
Coquago	100	New York	Catskill Mts	Delaware River
Conchas	300	Mexico		Rio Grande
Congaree	50	South Carolina	Saluda & Broad Riv.	Wateree River
Congo	1700	Congo and Loango, Af.	Interior Africa	Atlantic Ocean
Connecticut	410	Vt., N. H., Mass., Ct.	Borders of Canada	Long Island S'd
Coosa	350	Georgia and Alabama	Floyd Co., Ga	Tallapoosa Riv.
Coppermine	350	British N. America	Near Gre't Bear Lk.	Arctic Ocean
Cottonwood	100	Kansas	Marion Co.	Neosho River
Cowlitz	100	Washington Ter.	Washington Ter.	Columbia Riv.
Crooked	75	Oregon	Blue Mts	Des Chutes River
Cumberland	600	Tennessee	Cumberland Mts	Ohio River
Current	350	Missouri and Ark.	Texas Co., Mo.	Black River
Cuyuni		British Guiana S. A.	Venezuelan Mts	Essequibo River
Dakota, or James	400	Dakota	Devil's Lake	Missouri River
Dal-Elf	250	Sweden	E. and W. Dal Riv.	Gulf of Bothnia
Dan	200	Virginia and N. Car.	Patrick Co., Va.	Staunton River.
Danube	1750	Central Europe	Black Forest, Baden.	Black Sea
Darling	400	Victoria, Australia	New South Wales	Murray River
Dayman	100	Uruguay		
Dee	20	Ireland	County Louth	Dundalk Bay
Dee	50	Scotland	Kirkcudbrightshire	Solway Frith
Dee	90	Scotland	Cairngorm Mts	German Ocean
Dee	70	Wales	Merionethshire	Irish Sea
Delaware	300	New York, Pa., Del.	Catskill Mts	Atlantic Ocean
Des Chutes	250	Oregon	Cascade Mts	Columbia River
Des Moines	500	Minnesota and Iowa	Minnesota	Mississippi Riv.
Des Plaines	160	Illinois	Lake Co.	Kankakee River
Detroit	25	U. S. and Canada	Lake St. Clair	Lake Erie
Dnieper	1200	Russia	Gov't of Smolensk	Black Sea
Dneister	500	Austria	Carpathian Mts	Black Sea
Don	55	England	Yorkshire	River Ouse
Don	900	Russia	Gov't of Tula	Sea of Azof
Don	60	Scotland	Ben Aven	German Ocean
Douro	400	Spain and Portugal	Arragon, Spain	Atlantic Ocean
Dordogne	220	France	Rivers Dor & Dogne	River Garonne.
Drave	370	Austria	Eastern Tyrol	Danube
Drin	100	European Turkey	Albania	Adriatic Sea
Drome	60	France	Upper Alps	River Rhone
Duck	250	Tennessee	Cumberland Mts	Tennessee River
Du Lievre	260	Prov. of Quebec, Can		Ottawa River
Du Loup		Prov. of Quebec, Can		Riv. St. Lawrence
Du Moine	120	Prov. of Quebec, Can		Ottawa River
Duna	550	Russia	Valdai Plains	Gulf of Riga
Durance	170	France	Alps	River Rhone
Dwina	700	Russia	Prov. of Velogda	Gulf Archangel
East Main	400	Labrador	Lake Nitchegoon	Hudson's Bay
Ebro	350	Spain	Prov. Santander	Med. Sea
Edisto	100	South Carolina	Branchville, S. C.	Atlantic Ocean
Eel	100	Indiana	Boone Co.	White River
Eger	125	East Germany	North Bavaria	River Elbe
Eyder	90	Denmark		North Sea
Elbe	550	Germany	Reisengebirge Mts.	German Ocean
Elk	150	West Virginia		Gr't Kanawha R.
Elkhart	100	Indiana	Noble Co.	St. Joseph River
Elkhorn	120	Nebraska	Holt Co., Neb.	Platte River
Emba	300	Turkistan	Mongojar Mts	Caspian Sea
Enns	120	Austria	Salzburg Alps	Danube
Enz	70	Wurtemburg, Germ.	Germany	Neckar River
Erne	60	Ireland	Lake Ganny	Donegal Bay
Esla	125	Spain	Prov. of Valencia	River Douro
Essequibo	450	Brit. Guiana, S. A.	Acaray Mts	Atlantic Ocean
Etchemin	50	Prov. of Quebec, Can.	Lake Etchemin	Riv. St Lawrence
Euphrates	1600	Western Asia	Armenia	Persian Gulf
Exe	54	England	Somersetshire	English Channel
Exploits	70	Newfoundland	Red Indian Pond	Bay of Exploits
Faleme	200	West Africa		Senegal River
Feather	180	California	Plumas Co., Cal.	Sacramento R.
Flathead, or Clarke's Fork	650	Washington Ter.	Rocky Mts	Columbia River
Flat Rock	100	Indiana	Henry Co., Ind.	White River
Flint	300	Georgia	Clayton Co.	Chattahoochee R.
Forked Deer	300	Tennessee		Mississippi Riv.
Forth	180	Scotland	Stirlingshire, Scot.	Frith of Forth
Fox	200	Wisconsin	So. center of state	Green Bay
Fox	200	Wis. and Illinois	Waukesha Co., Wis.	Illinois River.
Frazer	400	British N. America	Rocky Mts	Gulf of Georgia
Fulda	90	Germany	Rhongebirge	River Werra
Gallatin	125	Montana	Lat. 44° N. Lon. 110° W.	Jefferson's River
Gambia	800	Senegambia, Af.		Atlantic Ocean.
Ganges	1557	Hindostan	Himalaya Mts	Bay of Bengal
Garigliano	75	South Italy		Med. Sea
Garonne	350	France	Spanish Pyrenees	Bay of Biscay
Gasconada	250	Missouri	Southern Missouri	Missouri River
Gatineau	400	Prov. of Quebec, Can.	N. of 48th deg. N. Latitude	Ottawa River
Genesee	145	Penn. and New York	Potter Co., Pa.	Lake Ontario
Ghogra	600	India	Mountain Ranges	River Ganges
Gila	450	New Mexico	Sierra Madre	Colorado River
Glenelg	205	Victoria, Australia		Indian Ocean
Glommen	400	Norway		Skager Rack
Goascoran	80	Honduras, C. A.		Fonseca Bay
Godavara	900	India	East of Ghauts Mts.	Bay of Bengal
Goulburn	230	Victoria, Australia		Indian Ocean

LENGTH OF IMPORTANT RIVERS THROUGHOUT THE WORLD—Continued.

NAME OF RIVER.	LENGTH.	COUNTRY IN WHICH LOCATED.	WHERE IT RISES.	WHERE IT EMPTIES.
Gran	130	Hungary	Carpathian Mts.	Danube
Grand	270	Michigan	Jackson Co., Mich.	Lake Michigan
Grande	1650	U. S. and Mexico	Rocky Mts.	Gulf of Mex.
Grande Rond	100	Oregon	Blue Mts	Snake River
Grasshopper	75	Kansas		Kansas River
G't Kanawha	400	N. C., Va. and W. Va.	Watauga Co., N. C.	Ohio River
Great Ouse	160	England	Northampton-shire, Eng.	The Wash Lynn Regis
Gre't Pedee (or Yadkin)	375	N. and S. Carolina	Blue Ridge Mts., N. C.	Atlantic Ocean
Great Slave	300	British N. America	Lake Athabaska	Great Slave Lk.
Green	300	Kentucky	Lincoln Co., Ky	Ohio River
Green	500	Wyoming Territory	Yellowstone Park	Colorado River
Guadalaviar	130	Spain	Sierra Albarracin	Gulf of Valencia
Guadalquivir	250	Spain	Sierra de Cazorla	Alantic Ocean
Guadalupe	250	Texas	Kerr Co., Tex	Espiritu Santo B
Guadiana	400	Spain and Portugal	Sierra of Alcaraz	Atlantic Ocean
Guaviare	450	U. S. of Colombia		Orinoco River
Guayape	250	Honduras, C. A.		
Guayaquil	110	Ecuador, S. A.	Dep't of Guayaquil	Pacific Ocean
Gunduk	400	Prov. Nepaul India	Himalaya Mts.	River Ganges
Havel	162	North Germany	Lake Woblitz	River Elbe
Hay	680	British N. America	Rocky Mts.	Great Slave Lake
Helmund	400	Afghanistan	N. E. Cabul, 35 M.	Lake Hamoun
Hoang-Ho	2500	China	Thibet	Yellow Sea
Hockhocking	80	Ohio	Perry Co., Ohio	Ohio River
Holston	200	Virginia and Tenn.	Wythe Co., Va	Tennessee River
Hopkins	110	Victoria, Australia		Indian Ocean
Housatonic	150	Mass. and Conn.	Berkshire Co., Mass.	Long Isl. Sound
Huallaga	600	Peru	Cordillera Mts.	Amazon River
Hudson	280	New York	Near 44 Deg. Lat.	Atlantie Ocean
Humber	36	England	Rivs. Ouse, Dun, etc.	German Ocean.
Humber	150	Newfoundland		Bay of Islands
Humboldt	350	Utah	Humboldt Mts.	Humboldt Lake
Hunte	90	Germany	Osnabruck	River Weser
Huron	90	Michigan	Eastern Michigan	Lake Erie
Iller	100	Suabia	Tyrol Mts.	Danube River
Illinois	350	Illinois	Grundy Co.	Mississippi River
Ilm	60	North Germany	Thuringerwald Mts.	River Saale
Indre	140	France	Dep't of Indre	River Loire
Indus	1960	Asia	Mt. Kailas, Thibet	Arabian Sea
Inn	280	Valley of the Tyrol	Rhœtian Alps	Danube
Iowa	300	Iowa	Hancock Co., Iowa	Mississippi River
Iroquois	100	Indiana and Illinois	Jasper Co., Ind	Kankakee River
Irrawaddy	1200	Farther India	British Burmah	Sea of Bengal
Irtisch	2200	North Asia	Altai Mts.	River Obi
Isen	60	Austria	North Bohemia	River Elbe
Isere	200	France	In Savoy	River Rhone
Iset	300	Russia in Asia	Ural Mts.	River Tobol
Ishim	900	Asiatic Russia	Lat. 51° N. Lon. 74° E.	River Irtisch
Isar	190	Germany	In the Tyrol	Danube
Jackson's	100	Virginia	Bath and Highland Counties	James River
Jacques Cartier	60	Prov. of Quebec, Can.	Pont Neuf Co., Can.	Riv. St. Lawrence
Jalon	120	Spain	Old Castile, Spain	River Ebro
James	450	Virginia and Maryl'd.	Rockbridge Co., Va.	Chesapeake Bay
Japura	1000	Brazil and Colombia	U. S. of Colombia	Amazon River
Jaxt	100	Wurtemburg, Germ.	Ellwaugen	Neckar River
John Days	250	Oregon	Blue Mts.	Columbia River.
Jordan	120	Palestine	Mt. Hermon, etc.	Dead Sea
Jumna	780	Hindostan	S. W. Himalaya Mts.	River Ganges
Juniata	150	Pennsylvania	Near Altoona, Pa.	Susquehanna R.
Kalamazoo	200	Michigan	Calhoun Co.	Lake Michigan
Kama	1200	Russia		Volga River
Kanawha	400	W. Virginia	Alleghany Mts	Ohio River
Kan-Kiang	350	China	Prov. Kiang-Si	Yang-tse-Kiang.
Kansas	400	Kansas	Fort Riley, Kas.	Missouri River
Kara-Su	130	European Turkey	Roumelia & Macedonia	Ægean Sea
Kaskaskia	300	Illinois	Champaign Co.	Miss. River
Kennebec	150	Maine	Mooseh'd Lake	Atlantic Ocean
Kentucky	250	Kentucky	Cumberland Mts.	Ohio River
Keepawa	120	Prov. of Quebec, Can.		Ottawa River
Kiou-long kiang	1200	Thibet, China, etc.	Thibet	China Sea
Kistnah	800	Hindostan	W. Ghauts Mts.	Bay of Bengal
Klamath	250	Oregon and Cal.	L. Klamath L'k	Pacific Ocean
Kolyma	700	Siberia	Stanavoy Mts.	Arctic Ocean
Kuban	380	So. Russia	Near Mt. Elbrooz	Black Sea
Kuran	800	Persia	Vilayet Erzerum	Caspian Sea
Kuskoguim	1500	Alaska	Alaska	Pacific Ocean
Kwickpak	1800	Alaska	Rocky Mts	Behring's Strait
Lachlan	400	E. Australia	New So. Wales	Morambidgee R.
LaPlata	200	Uruguay	Uruguay & Parana River	So Atlantic Ocean
Laramie	200	Wyoming Ter.	Laramie Mts.	North Platte
Lauter	45	Bavaria	Vosges Mts.	Rhine
Lavaca	70	Texas	Lavaca, Co. Tex.	Lavaca Bay
Lech	150	Germany	In the Voralberg	Danube
Lehigh	90	Pennslyvania	Pike and other Co's	Delaware Riv.
Lempa	150	San Salvador S. A.	Lake of Guija	Pacific Ocean
Lena	2500	Siberia	Near Irkutsk	Artic Ocean
Lewis Fork (Snake Riv)	900	Idaho Was. Ter.	S. E. Idaho	Columbia Riv.
Licking	200	Kentucky	Cumberland Mts.	Ohio River
Liffey	50	Ireland	Wicklow Mts.	Dublin Bay
Limari	100	Chili, S. A.	Chili	Pacific Ocean
Lippe	100	Germany		River Rhine
Loddon	150	Victoria, Australia		Indian Ocean
Loing	70	France	Dep't of Yonne	River Seine
Loire	670	France	Dep't of Ardecke	Bay of Biscay
Lune	50	England	Westmoreland Co., Eng.	Irish Sea
Mackenzie	1700	British N. America	Great Slave Lake	Artic Ocean
Macquari	230	E. Australia	New South Wales	No outlet
Madawaska	250	Prov. of N. B. Can.		St. John River
Madeira	2000	South America	Bolivia	River Amazon
Maganet-awau	100	Prov. of Ont., Can.		Georgian Bay
Magdalena	960	Colombia, S. A.	Andes Mts.	Carribbean Sea.
Mahanuddy	550	Hindostan	Prov of Gundwana	Bay of Bengal
Main	300	Central Germany	Bavaria	Rhine
Mal Bale		Prov of Qubec, Can.		R. St. Lawrence
Malheur	140	Oregon	Blue Mountains	Snake River
Mamore	500	Bolivia, S. A.	R. Guasey-Chapari	Beni River
Manistee	150	Michigan	Crawford, Co.	Lake Michigan
Marais des Cygnes	120	Kansas		Osage River
March or (Marana)	180	Austria		Danube
Maritza	300	Turkey in Europe	Balkan Mts.	Grecian Arch.
Marne	200	France	Dep't Haute Marne	River Seine
Maros	400	Transylvania	Borders Moldavia	River Theiss
Matane	60	Prov. of Quebec, Can.		R. St. Lawrence
Mattawan	45	Prov. of Ont., Can.		Ottawa River
Maumee	180	Indiana	Ft. Wayne, Ind.	Lake Erie
Mayenne	125	France	Dep't of Orne	River Loire
Mayo	150	Mexico	Mexico	[illegible]
Medway	50	England	Sussex Co. Eng	[illegible]
Meherria	160	Va. and No. Car.	Charlotte, Co., Va.	Nottaway Riv.
Mejerda	200	Algeria and Tunis	Atlas Mt., Algeria	Mediter. Sea
Menom	800	China and Siam	Tableland of China	Gulf of Siam
Mendoza	200	Argentine Republic	Eastern Andes	L. Guanacache
Merrimack	150	N. Hamp. and Mass.	Northern N. Hamp.	Atlantic Ocean.
Mersey	60	England	Chtr. Derby Y. Co's.	Irish Sea
Mescala	450	Mexico	Kascala, Mexico	Pacific Ocean
Meta	500	U. S. of Colombia	Eastern Andes	Orinoco River
Meuse-Maas	400	France, Belg. and Hol.	France	North Sea
Milk	150	Brit. N. A and Mont.	Rocky Mountains	Missouri River
Milwaukee	90	Wisconsin	Fond du Lac C. Wis.	Lake Michigan
Minho	130	Spain and Portugal	Galicia	Atlantic Ocean
Minnesota	420	Minnesota	Near Dak. bonndry	Mississippi Riv.
Miramicki	75	New Brunswick	Victoria Co. N. B.	S. Lawrence Gulf.
Mississippi	100	Prov. of Ontario		Ottawa River
Miss. (English)	625	British America	L. LaCrosse, B. N. A.	Hudson's Bay
Mississippi	2616	North America	Itaska Lake Minn.	Gulf of Mexico
Missouri	4194	United States	Rocky Mountains	Gulf of Mexico
Mobile	50	Alabama	Ala. Tombigbee Riv.	Mobile Bay
Mohawk	135	New York	Oneida County	Hudson River
Moldau	276	Bohemia	Bohmerwald Mts.	River Elbe
Moldava	110	Poland & Moldavia	Carpathian Mts.	Sireth River
Mouacacy	50	Maryland	Adams Co., Penn.	Potomac River
Monongahela	300	W. Va. and Penn.	Marion, Co., W. Va.	Ohio River
Morambidgee	400	Australia	Murray Co., N. S. W.	River Murray
Morava	181	Austria	In the Schneeberg	Danube
Moselle	300	France	Dep't of Vosges	River Rhine
Motagua	300	Guatemala	Mts. S. Geronimo	Bay Houduras
Murray	1000	Victoria, Australia	Warragong Mts.	Lake Victoria
Muskegon	200	Michigan	Roscommon Co.	Lake Michigan
Muskingum	110	Ohio	Licking Co., Ohio	Ohio River
Muy Kuang	1300	China	Thibet	China Sea
Naab	90	Bavaria		Danube
Nab	90	Bavaria		River Danube
Napo	500	Ecuador, S. A	East of the Andes	River Amazon.
Narenta	140	Turkey in Europe	Dinaric Alps	Adriatic Sea
Neckar	240	Germany	Schwarzwald	Rhine
Negro	350	Uruguay	Sierra Santa Ana	Uruguay River.
Negro Sauces	700	Argentine Rep. S. A.	E Slope of Andes	Atlantic Ocean
Negro	500	Patagonia	Chil. Mts. (Andes)	Atlantic Ocean
Neisse	98	Silesia (Prus.)		River Oder
Nemaha	150	Nebraska	Clay Co., Neb.	Missouri River
Nene	90	England	Northampton-shire, Eng.	North Sea
Nerbudda	800	Hindostan	Prov. of Gundwana	Gulf of Cambay
Neuse	250	North Carolina	No. Centre boundry	Pamlico Sound
Neva	40	Russia	Gv't S. Petersburg	Gulf of Finland.
Niagara	35	U. S. and Canada	Lake Erie	Lake Ontario
Nicolet	60	Prov. of Quebec, Can.		R. St. Lawrence
Niemen or (Memel)	400	Russian Poland	Gov. of Minsk	Frische Haff
Niger	2300	Central Africa	Western Coast	Gulf of Berien
Nile	3500	N. E. Africa	Blue R. & White R. L. 15° 34' N, Lon. 32° 30' 58" E	Mediteranean. Sea
Niobrara	400	Dakota & Nebraska	Sioux Co. Neb.	Missouri River
Nisao	55	Hayti, W. I.	Mts. of Cibas	Atlantic Ocean
Nord or North	160	Prov. of Qubec, Can.		Ottawa River
North Petite Nations	95	Prov. of Qubec, Can		Ottawa River
N. & S. Potomac	100	West Virginia	Alleghany M'ts	Potomac River
Nottaway	110	Va. and N. Car.	Nottaway Co. Va.	Meherria River.
Nueces	350	Texas	Maverick Co. Tex.	Gulf of Mexico
Nunez	200	Senegambia, Af.		Atlantic Ocean
Obi	2700	Asiatic Russia	Little Altai Mts.	Gulf of Obi
Ockmulgee	200	Georgia	Newton Co. Ga.	Oconee River
Oconee	250	Georgia	Washington Co Ga.	Altamaha River
Oder	500	Germany	n'r Olmutz.v Moraia	Baltic Sea
Oglio	130	North Italy	Rhœtian Alps	River Po
Ogowai		Western Africa		Atlantic Oceun
Ohio	950	Pa. Ohio, Ky. Ind. Ill.	Pittsburg, Pa.	Miss. River
Oise	190	Belgium and France	Belgium	River Seine
Olekma	400	Siberia	Asiatic Russia	River Lena
Onega	250	Russia	Lake Latchka	White Sea
Orange	1,000	South Africa	nr lat 29°s lon 30°e.	Atlantic Ocean.
Orinoco	1,500	Venezuela	Sierra de Parima	Atlantic Ocean
Orne	86	France	Dep't of Orne	British Channel
Osage	500	Kansas & Missouri	Lyon Co., Kansas	Missouri River.
Oswego	24	New York	N. W. New York	Lake Ontario
Ottawa, or Grand	800	Upp'r & Lower Canada	abt lat 48½ lon 80°w	St. Lawrence R.
Otter Creek	80	Vermont	Bennington Co. Vt	Lake Champlain
Ouse	60	England	Yorkshire, Eng.	River Trent
Ovens	100	Victoria, Australia		Indian Ocean
Owghee	200	Oregon	Blue Mountains	Snake River
Ozama	50	Hayti, W. I.	Central District	Caribbean Sea
Panaro	75	North Italy	Mt. Cimone	River Po
Para	200	Brazil	Amazon River	Atlantic Ocean.
Paraguay	1,800	Paraguay & Brazil	Matto Grosso, Br'zl.	Parana River

LENGTH OF IMPORTANT RIVERS THROUGHOUT THE WORLD—Continued.

NAME OF RIVER.	LENGTH	COUNTRY IN WHICH LOCATED.	WHERE IT RISES.	WHERE IT EMPTIES.
Parana	**1,860**	**Uruguay**	**Brazilian Mts**	**La Plata River**
Parima, (or White)	700	Brazil	Sierra Pecaraima	Rio Negro
Parnahila	750	Brazil	Lat 11°s; lon 47°w	Atlantic Ocean.
Paru	350	Brazil, S. A.		River Amazon
Passaic	**100**	**New Jersey**	**Morris Co., N. J.**	**Newark Bay**
Pascagoula	110	Mississippi	Greene Co., Miss.	Gulf of Mexico
Passa'quoddy	75	Me. and N. Brunswick	Grand Lake, Me.	Passamaq'ddy B
Pastaza	**540**	**Ecuador**		**River Amazon**
Patapsco	80	Maryland	Carroll Co., Md.	Chesapeake Bay
Patuca	200	Honduras, C. A.		
Patuixent	50	Maryland		Chesapeake Bay
Pawtuxet	90	Maryland	Montgomery Co.	Chesapeake Bay
Peace	800	Brit. N. America	Rocky Mountains	Lake Athabasca
Pearl	250	Mississippi	Williston Co., Miss.	Gulf of Mexico
Pecos	700	New Mex and Texas	R'cky Mts, nr S. F.	Rio Grande
Petho	350	China	Borders of Tartary	G'f of Pe Chih'le
Penobscot	300	Maine	Green Mountains	Penobscot Bay
Perak	80	Malacca	So of Perak Malacca	Str'it of Malacca
Petawawa	160	Prov of Ont. Can		Ottawa River
Petchora	940	European Russia	Ural Mountains	Arctic Ocean
Peticodiac	100	New Brunswick		Bay of Fundy
Piave	125	Italy	Alps	Adriatic Sea
Pilaya	300	Bolivia, S. A.	Eastern Andes	Riv. Pilcomayo
Pilcomayo or Araguai	**1000**	**Bolivia & Paraguay**	**Bolivia**	**Paraguay River**
Piscataqua	80	New Hampshire	Stafford Co., N. H.	**Penobscot River**
Plata (Rio de la)	200	South America	Parana & Paraguay	Atlantic Ocean.
Platte (or Nebraska)	**1,200**	**Wyoming & Colorado**	**Wind Mts Wyo T** Park Mts. Colo.	**Missouri River**
Po	340	Italy	Cottian Alps	Adriatic Sea
Polochique	150	Guatemala	Hills near Coban	L'ke Golfo Dolce
Potomac	400	Maryland & Virginia	Nr Cumberland, Md	Chesapeake Bay
Powder	200	Oregon	Blue Mountains	Snake River
Pruth	**500**	**Aust, Moldavia, Russia**	**Galicia Mt. Rusky**	**River Danube**
Purus	500	South America	Peru	River Amazon
Putumayo	675	Ecuador & Brazil	Andes Mountains	River Amazon
Quaraim	160	Uruguay		River Uruguay.
Queguay	**150**	**Uruguay**		
Raab	**180**	**Hungary**	**Styria**	**Danube**
Rapidan	80	Virginia	Blue Ridge, Va.	Rappahannock
Rappahannock	**125**	**Virginia**	**Rapidan & No Fork R**	**Chesapeake Bay**
Raritan		New Jersey	Somerset Co, N. J.	Atlantic Ocean.
Red Cedar	300	Minn. & Iowa	Freeborn Co. Minn	Iowa River
Red River & Br'nch's	2,100	Tex. Ind. Ter. Ark. La.	N. W. Texas	Mississippi River
Red of the N	700	Minn., Dak., B. N. A.	Otter Tail Co Minn	Lake Winnepeg.
Reese	100	**Nevada**	**Nye Co., Nev**	**No Outlet**
Regan	70	**Bavaria**	**Bohmerwald**	**Danube**
Regnitz	35	Bavaria		River Main
Republican	500	Colo. Kans. & Neb.	Arapahoe Co., Col	Kansas River
Restigouche	200	Prov. N Brunswick C		Bay of Chaleuss
Reuss	100	Switzerland	Nr Mt. St. Gothard	River Aar
Rhine	**950**	**Switzerland & Ger.**	**N. Side of the Alps**	**German Ocean**
Rhone	**650**	**S. W. Europe**	**Switzerland Glacier**	**Gulf of Lyons**
Richelieu	260	Prov. of Quebec, Can		Riv. St Lawrence
Rideau	100	Prov of Ontario Can		Ottawa River
Rio Branco	**700**	**Brazil**	**nr Source Rio Negro**	**Rio Negro**
Rio Grande	**1,800**	**Mex. and U. S**	**S. W. Colorado**	**Gulf of Mexico**
Rio Grande	400	Senegambia, Af.	Lat 11°20'n, lon 11°n	Atlantic Ocean
RioHacha	120	U. S. of Colombia, S. A.	Colombia	Caribbean Sea
Rio Negro	1,200	Columbia & Venezuela	Colombia Hills	Amazon River
Rio Negro	700	Argentine Republic	Eastern Andes	Atlantic Ocean.
Roanoke	250	Virginia & No Car	Mechlenburg Co Va	Albemarle S'nd.
Rock	**350**	**Wisconsin and Ill.**	**Koshkonong Lake**	**Mississippi Rver**
Rogue	**200**	**Oregon**	**Cascade Mountains**	**Pacific Ocean**
Rouger	**90**	**Prov. of Quebec Can**		**Ottawa River**
Rupert	300	Brit. N. America	Misstissinny Lake	Hudson's Bay
Rupununa	250	Brit. Guiana S. A.		Essequibo River
Russian	125	California	Mendocino Co.	Pacific Ocean
Saale	200	Germany	Bavaria	Elbe
Saar	120	France & Germ	Vosges Mountains	River Moselle
Sabine	**500**	**Texas**	**N. E. Texas**	**Gulf of Mexico**
Saco	160	New Hamp. & Maine	White Mts. N. H.	Atlantic Ocean
Sacramento	370	California	Mount Shasta, Cal	Suisun Bay
Saghalien	1,000	Manchuria	Mongolia	Sea of Okhotsk.
Saginaw	30	Michigan	Saginaw Co.	Saginaw Bay
Saguenay	260	Prov. of Qubec, Can.	200 miles west of Lake St. John	R. St. Lawrence
St. Anne	120	Prov. of Qubec, Can		R. St. Lawrence
St. Clair	40	Michigan and Canada	Lake Huron	Lake St. Clair
St. Croix	200	Wisconsin and Minn.	Douglas Co. Wis.	Mississippi River
St. Francis	**100**	**Prov. of Quebec, Can**		**R. St. Lawrence**
St. Francis	450	Missouri & Arkansas	St. Francis Co. Mo	Mississippi Riv'r
St. John	450	Prov. of N. Brunswick	L'ke St John Maine	Bay of Fundy
St. John	200	Florida	Orange Co., Fla.	Atlantic Ocean
St. Joseph	250	Michigan	Hillsdale Co	Lake Michigan
St. Lawrence	750	North America	Lake Ontario	G'f of St Lawrence
St. Louis	200	Minnesota	St Louis Co. Minn	Lake Superior
St. Marie	62	Michigan & Canada	Lake Superior	Lake Huron
St. Marys	100	Georgia & Florida	Ware Co. Ga	Atlantic Ocean
St. Maurice	400	Prov. of Quebec, Can	Highlands of Can.	R. St. Lawrence
Sakmara	350	Russia in Asia	Ural Mountains	Ural River
Salado	600	Argentine Republic	Andes Mountains	Parana River
Saline	200	Arkansas	Saline Co. Ark	Washita River
Saluda	200	South Carolina	Blue Ridge Mts	Broad River
Sambre	100	France and Belgium	Aisne France	River Meuse
San	250	Austrian Poland	Carpathian Mt	River Vistula
Sandy	50	W. Va. and Kentucky	Tug & W. Fork W. Va	Ohio River
San Fr'isco	1,400	Brazil	Serra Vertente	Atlantic
Sangamon	200	Illinois	Sangamon Co	Illinois River
San Joaquin	350	California	Sierra Nevada Mts	B. of S. Francisco
San Jose	**100**	**Uruguay**		**Rio de la Plata**
San Juan	100	Nicaragua, C. A.	Lake Nicaragua	Caribbean Sea
Santa Cruz	200	Patagonia		Atlantic Ocean
Santa Lucia	**120**	**Uruguay**		**Rio de la Plata**
Santee	[illegible]	South Carolina	Blue Ridge Mt	Atlantic Ocean
Santiago	[illegible]	Ecuador, S. A.		River Amazon
Saone	[illegible]	France	Dep't of Vosges	River Rhone
San Fr'isco	**1,200**	**Brazil**	**S. Lat. 20°; W.** **Lon. 45°**	**Atlantic Ocean**
Saramaca	200	Dutch Guiana		Surinam River
Sarpa	200	Russia	Gov't of Astrakhan	River Volla
Sarth	160	France	Dep't of Orne	River Mayenne.
Saskatchewan	**1,000**	**British N. America**	**Rocky Mountains**	**Lake Winnepeg**
Savannah	450	N. Car. Ga. & S. Car.	Alleghany Mts in N C	Atlantic Ocean
Save	**590**	**Bosnia, Austria**	**Illyria**	**Danube**
Scheldt	200	France & Belgium	Dp't of Aisne, F.	German Ocean
Scioto	200	Ohio	Hardin Co. Ohio	Ohio River
Schuylkill	120	Pennsylvania	nr. Pottsvill, Pa.	Delaware
Schwartza		North Germany		River Saale
Seboo	160	Morocco	Atlas Mts.	Atlantic Ocean.
Segura	180	Spain	Murcia, Spain	Med. Sea
Segundo	130	Argentine Republic	27 M. from Cordova	Marshy Lake
Seine	414	France	Dep't of Cote d'Or	Brit. Channel
Sele	60	South Italy		Gulf of Salerno
Selenga	500	Siberia	Mongolia	Lake Baikal
Semotchis	160	Tennessee	Bledsoe Co., Tenn.	Tennessee River
Senegal	1,000	Senegambia	Mount Cooro	Atlantic Ocean.
Sereth	300	Turkey in Europe	Austrian Galicia	River Danube
Severn	350	British America	Latitude 52° 30'	Hudson's Bay
Severn	200	England	Plin. Mt. Wales	British Channel
Sevier	200	Utah		Lake Sevier
Sevres Nortaise	**65**	**France**	**Dp't of Deux-sevres**	**Atlantic Ocean.**
Shannon	**220**	**Ireland**	**Western Ireland**	**Atlantic Ocean**
Shat-el-Arab	1800	Persia	Euphrates & Tigris	Persian Gulf
Shelliffe	**200**	**Algeria, Africa**	**Algeria**	**Med. Sea**
Shenandoah	170	Virginia	Augusta and Rockingham C's	Potomac River.
Sieg	80	Prus. and Westphalia	Prussia	River Rhine
Sioux	300	Minn. and Iowa	Minnesota	Missouri River.
Skagit	100	Brit. Columb. Wash. T.	British Columbia	Puget Sound
Slaney	**60**	**Ireland**	**Wicklow Co.**	**St. George's Ch'l**
Smoky Hill	400	Colo. & Kansas	East Colorado	Kansas River
Snake	750	Oregon & Wash. Ter.	Rocky Mountains	Columbia River
Solomon	300	Kansas	N. W. Kansas	Smoky Hill Riv.
Somme	**120**	**France**	**Dep't of Aisne**	British Channel
Sone	**463**	**British India**		**River Ganges**
Sorel	80	Prov. of Qubec, Can		R. St. Lawrence
Spree	**200**	**Prussia**	**East of Saxony**	**River Havel**
Spokane	100	Idaho, Wash. Ter.	Cœurd'Aleue L. Ida.	**Columbia River.**
Spey	100	Scotland	Inverness-Shire	North Sea
Spoon	100	Illinois	N. W. Illinois	Illinois River
Staunton	200	Virginia	Montgomery Co Va.	Roanoke River
St. Croix	125	New Brunswick		Passamaquoddy
Sugar	**100**	**Indiana**	Clinton Co., Ind.	Wabash River
Suir	**100**	**Ireland**	**Tipperary Co.**	**Wexford Harbor**
Surinam	**300**	**Dutch Guiana S. A.**		**Atlantic Ocean.**
Susquehanna	400	N. Y., Penn. & Md.	Western New York	Chesapeake Bay
Sutlej	950	Hindostan	Thibet	Chenab River
Tab	150	Persia	Persia	Persian Gulf
Tabasco	250	Guatemala		Gulf of Mexico
Tagliamento	**100**	**North Italy**	**Alps**	**Adriatic Sea**
Tagus	**400**	**Spain Portugal**	**Aragon & N Castile**	**Atlantic Ocean.**
Tallahatchee	250	Mississippi	Tippah Co., Miss.	Yazoo River
Tallapoosa	250	Ga. and Ala.	Paulding Co., Ga.	River Coosa
Tambo	**280**	**Peru**	**Apurimac River**	**Ucayali River**
Tana-elf	**180**	**Norway**		**Arctic Ocean**
Tanaro	140	North Italy	Southern Alps	River Po
Tapajos	600	Brazil	Brazilian Andes	River Amazon
Taptee	450	India	Baitool Penins.	Gulf of Cambay
Tar	140	North Carolina	Person Co., N. C.	Pamlico Sound
Tarn	220	France	Lozere Mt	River Garonne
Tay	**130**	**Scotland**	**Argyleshire**	**German Ocean**
Tees	**90**	**England**		**North Sea**
Teffe	**500**	**Brazil**		**River Amazon**
Tennessee	800	Tenn. Ala. Miss. & Ken.	Roane Co., Tenn.	Ohio River.
Terra Nova	100	Newfoundland		D'Espoir Bay
Thames	250	England	nr Cirencester, Eng	North Sea
Thames	160	Prov. of Ont. Can.	Oxford Co., Ont.	Lake St. Clair
Thiess	500	Hungary	Hungary (N. E.)	Danube
Tiber	**212**	**Italy**	**Appenine Mts.**	**Med. Sea**
Tiber	212	Italy	Tuscan Alpenines	Med. Sea
Tibeuari	250	Paraguay	Sierra Amambahy	Paraguay River
Tremo	120	Switzerland	Mt. St. Gothard	River Po
Tigre	**350**	**Ecuador, S. A.**		**River Amazon**
Tigris	**1150**	**Turkey and Persia**	**Armenian Mts.**	**Persian Gulf**
Tippecanoe	200	Indiana	Kosciusko, Co.	Wabash River
Tobol	450	Asiatic Russia	Ural Mountains	Arctic Ocean
Tocatines	1,300	Brazil	Cordilleras Mts.	River Para
Tombigbee	450	Miss. & Alabama	Tishemingo C, Miss.	Mobile River
Tonegawa	**172**	**Japan**		
Tongue	300	Wyoming Territory	Wyoming Ter	Yellowstone Riv
Tornea	250	Russia and Sweden	Lake Tornea, Swed.	Gulf of Bothnia
Trent	180	England	Staffordshire, Eng	River Humber
Trent	100	Ontario, Can.	Northumberland C.	Bay of Quinte
Trinity	550	Texas	Dallas Co., Tex.	Galveston Bay
Truckee	60	Nevada		Pyramid Lake
Tweed	95	Scotland	Peebleshire	North Sea
Tygart's Val.	150	West Virginia	Randolph Co. W. V.	Monongahela R.
Tyne	80	England	Northumberl'd, Eng.	German Ocean
[illegible]	100	Brazil, S. A.		Para River
[illegible]	300	Brazil, S. A.	Prov. of Para	River Amazon
Ucayali	1200	Peru	near Cuzco	Amazon River
Uda	400	Siberia		Sea of Okhotsk
Umatilla	[illegible]	Oregon	Blue Mts.	Columbia River
Umpqua	200	Oregon	Cascade Mts	Pacific Ocean
Una	150	Brazil		Atlantic Ocean
Up. Amazon	[illegible]	Peru	Cordillera Mts	Amazon River
Ural	1800	Russia	Gov't of [illegible]	Caspian Sea
Uruguay	1020	Brazil and Uruguay	Santa Catherine, B.	Parana River
Usaminta	**350**	**Guatemala**	Mts. near San Geronimo	**Gulf of Mexico**
Vaal	500	S. Africa, Orange F. St.	N. W. Natal	Orange River
Vecht	**90**	**Netherlands and** Westphalia	**Netherlands**	**Zuyder Zee**
Verdigris	200	Kansas	Greenwood Co	Arkansas River
[illegible]	750	Ecuador and Brazil	Andes Mts	River Amazon

LENGTH OF IMPORTANT RIVERS THROUGHOUT THE WORLD—Continued.

NAME OF RIVER.	LENGTH	COUNTRY IN WHICH LOCATED.	WHERE IT RISES.	WHERE IT EMPTIES.
Vermilion	150	Dakota	Dakota	Missouri River
Vichada	200	U. S. of Colombia		Orinoco River
Vienne	220	France	Dep't of Correze	River Loire
Vistula and Forks	530	Silesia, Poland, Prus.	Carpathian Mts.	Baltic Sea
Vitim	900	Siberia	Gov't of Irkutsk	River Lena
Volga	2400	Russia	Valdai Mts.	Caspian Sea
Voltumo	90	South Italy	Prov. of Molise	Gulf of Gaeta
Waag	200	Hungary	Carpathian Mts.	Danube
Wabash	550	Ind.,Ohio and Ill.	Ohio, Mercer Co.	Ohio River
Walla Walla	75	Oregon & Wash. Ter.	Blue Mts.	Columbia River
Wannon	105	Victoria, Australia		Indian Ocean
Wakarusa	50	Kansas		Kansas River
Wapsipinicon	200	Iowa	Howard Co., Iowa	Mississippi River
Wartha	450	Poland		River Oder
Washita	500	Ark. and Louisiana	Polk Co., Ark.	Red River
Werra	150	Germany	Thuringia	River Fulda
Weser	250	Germany	Rivs.& Werra Fulda	North Sea
White	50	Indiana	Daviess Co., Ind.	Wabash River
White and Forks	800	Ark, and Missouri	Ozark Mts.	Mississippi
White and Forks	350	Indiana	Daviess and Randolph Co's	Wabash River.
White Elster	110	Germany	N. W. Bohemia	Saale River
White Nile	260	Africa		Lake Victoria N
Whitewater	100	Indiana	Franklin Co.	Miami River
Whitewater	250	Missouri	Cape Girardeau Co.	Big Lake
Wild Cat	75	Indiana	Howard Co., Ind.	Wabash River.
Wild Rice	100	Minnesota		Red River of the North
Willametta	155	Oregon	Cascade Mts.	Columbia River
Wimmera	135	Victoria, Australia		Indian Ocean
Wisconsin	600	Wisconsin	Vieux Desert Lake	Mississippi Riv.
Wolf	150	Wisconsin	Marathon Co., Wis.	Fox River
Wolf	100	Mississippi and Tenn.	Tippah Co., Miss.	Mississippi Riv.
Wye	130	Wales	Montgomeryshire	Severn River
Yallobusha	100	Mississippi	Chickasaw Co., Miss.	Yazoo River
Yamaska	90	Prov. of Quebec, Can.		Riv. St. Lawrence
Yangtse-Kiang	2500	China	East Thibet	Yellow Sea
Yaque	100	Hayti		Bay of Monte Christo
Yaqui	400	Sonora, Mexico	North of Lat. 32° N.	G. of California
Yarra-Yarra		Victoria, Austrialia		Indian Ocean
Yazoo	200	Mississippi	Carroll Co., Miss.	Mississippi River
Yellowstone	1000	Dak., Wy. T. and Mont.	Yellowstone L., Y.T.	Missouri River
Yenesei	2300	Siberia	Mongolia	Arctic Ocean
Yonne	150	France	Dep't of Nievre	River Seine
Yukon	1850	Alaska	British Columbia	Pacific Ocean
Yuna	70	Hayti, W. I.	Mts. of Cibao	Atlantic Ocean
Youghiogheny	150	W. Va., Pa. and Md.	Preston Co., W. Va.	Monongahela R.
Zambesi	1800	Eastern Africa	About Lat. 11° S. Lon. 23 °E.	Indian Ocean

Tables of Length, Breadth, Heighth and General Measurement.

BRIDGES OVER 1,000 FEET LONG.

NAME OF BRIDGE.	KIND OF BRIDGE.	LENGTH IN FEET
Arcueuil Aqueduct	Stone	1,279
Avignon		1,710
Badajoz		1,874
Baretin Viaduct	Stone	1,545
Belfast		2,500
Biscari Aqueduct	Stone	1,222
Bombay		3,730
Boston		3,483
Boyne	Iron	1,760
Britannia	Iron	1,488
Brooklyn	Suspension	5,989
Carpenters Aqueduct	Stone	2,558
Caserta Aqueduct	Stone	1,687
Chaumont Viaduct		1,968
Cincinnati	Suspension	1,067
Clifton, Niagara	Suspension	1,268
Congleton Viaduct	Stone	2,870
Crumlin Viaduct	Iron	1,050
Danube Austria	Iron	2,520
Dee Viaduct, Pa	Stone	1,388
Dinting Vale Viaduct	Wood	1,452
Dubuque, Iowa	Iron	1,758
Eauplet	Wood	1,148
Godevery Viaduct	Stone	2,356
Goeltzsehthal Viaduct	Stone	1,900
Guethis	Stone	1,476
Harlam Aqueduct	Stone	1,450
Hungerford	Suspension	1,350
Indre Viaduct	Stone	2,463
Kieff	Suspension	2,562
Landore Viaduct	Wood	1,760
Lisbon Aqueduct	Stone	3,805
Lockwood Viaduct	Stone	1,428
Louisville (Ky.)		5,310
Maintenon Aqueduct	Stone	16,367
Mayence, (Over Rhine)		3,380
Menai	Suspension	1,050
Mont Louis	Stone	1,257
Nabresina	Stone	2,115
Nevers	Iron	1,066
Niagara	Suspension	2,220
Omaha, (Neb.)		2,800
Orense	Stone	1,209
Orleans	Stone	1,110
Ouse Valley Viaduct	Brick	1,290
Parkersburg, (W. Va)	Iron	7,045
Po, (Italy, near Cortez)		2,485
Potomac		5,300
Quincy, (Ill)	Iron	3,200
Riga	Stone	2,600
Royal Border, (Berwick)	Stone	2,160
Saltask	Iron	2,195
Schuylkill	Wood	1,000
St. Anne's	Iron	1,350
St. Charles, (Mo)	Iron	6,536
St. Esprit	Stone	2,690
St. Louis, (Mo)	Iron	1,509
St. Petersburg	Iron	1,090
Stockport	Stone	1,792
Strasburg	Stone	3,390
Susquehanna	Stone	3,500
Tarascon	Iron	1,575
Toulouse	Stone	1,422
Verona	Stone	1,328
Victoria, (Montreal)	Iron	9,437
Vistula (Germany)	Iron	2,750
Waterloo	Stone	1,380
Westminster	Stone	1,220

RAILWAY CROSS TIES.

Number required in a mile with the following distance in inches from center to center of each tie.

Inches.	No. Ties.
18	3,520
21	2,017
24	2,640
27	2,348
30	2,113
33	1,921
36	1,761

SIZE OF NAILS.

The number ordinarily contained in a pound being rated from 3 penny to 20 penny.

Kind of Nail.	Length Inches.	No. in a Pound.
3-penny	1	557
4-penny	1¼	535
5-penny	1¾	282
6-penny	2	177
7-penny	2¼	141
8-penny	2½	101
10-penny	2¾	68
12-penny	3	54
20-penny	3½	34

GRADE IN A MILE.

The following shows the grade per mile having one foot of incline in a certain distance:

1 ft. in	10	is 528 ft.	per mile
1 "	15 "	352	"
1 "	20 "	264	"
1 "	25 "	211	"
1 "	30 "	176	"
1 "	35 "	151	"
1 "	40 "	132	"
1 "	50 "	106	"
1 "	100 "	53	"
1 "	125 "	42	"

SIZE OF AN ACRE.

10 Rods by	16 Rods,	1	Acre
8 "	20 "	1	"
5 "	32 "	1	"
4 "	40 "	1	"
5 Yds	968 Yds.	1	"
10 "	484 "	1	"
20 "	242 "	1	"
40 "	121 "	1	"
220 Feet	198 Feet,	1	"
110 "	396 "	1	"
55 "	792 "	1	"
120 "	363 "	1	"

THE LENGTH OF A MILE

Of various nations compared with the mile of England and the United States.

Country.	Yards.
Swiss mile	9,153
Vienna mile	8,296
German mile	8,106
Swedish mile	7,341
Flemish mile	6,869
Dutch and Prussian	6,480
Irish mile	2,240
Arabian mile	2,140
Roman mile	2,025
Scotch mile	1,984
Turkish mile	1,826
Tuscan mile	1,808
Italian mile	1,766
English mile	1,760
American mile	1,760

Altitude Above Sea Level.

Town.	Feet.
Marshall Pass, Col	10,820
Fort Garland, Col	8,365
Mt. Washington, N. H	6,293
Ft. Phil. Kearney, Wy	6,000
Salt Lake City, Utah	4,322
El Paso, Texas	3,831
Yankton, Dakota	1,900
Dubuque, Iowa	1,400
Omaha, Neb	1,300
Knoxville, Tenn	1,000
Pittsburg, Pa	935
Ann Arbor, Mich	880
Lawrence, Kan	803
Indianapolis, Ind	700
Cleveland, Ohio	645
Detroit, Mich	595
Milwaukee, Wis	590
Chicago, Ills	591
Buffalo, N. Y	580
Cincinnati, Ohio	480
St. Louis, Mo	480
Louisville, Ky	449
Concord, N. H	375
Vicksburg, Miss	[illegible]
Baltimore, Md	275
Portland, Me	185
San Francisco, Cal	130
Washington, D. C	92
Boston, Mass	82
Albany, N. Y	75
New York, N. Y	60
Philadelphia, Pa	[illegible]
Charleston, S. C	27
Sacramento, Cal	22
New Orleans, La	10

CONDENSED INFORMATION.

To lay off a square acre.—Measure 209 feet on each side and you have a square acre within an inch.

An acre contains 4,840 square yards.

A square mile contains 640 acres.

A mile is 5,280 feet, or 1,760 yards in length.

A fathom is six feet.

A league is three miles.

A Sabbath day's journey is 1,155 yards—this is eighteen yards less than two thirds of a mile.

A day's journey is 33⅛ miles.

A cubit is two feet.

A great cubit is 11 feet.

A hand (horse measure) is four inches.

A palm is three inches.

A span is 10⅞ inches.

A space is three feet.

A barrel of flour weighs 196 pounds.

A barrel of pork 200 pounds.

A barrel of rice 600 pounds.

A barrel of powder 25 pounds.

A firkin of butter 56 pounds.

A tub of butter 84.

BRICK IN CHIMNEYS.

BRICKS, for chimneys, may be estimated for each foot in height, as follows:

Size of Chimney.	Size of Flue.	No. Bricks each ft. in height.
16 x 16	8 x 8	30
20 x 20	12 x 12	40
16 x 24	8 x 16	40
20 x 24	12 x 16	45

Dimensions of Great Cathedrals.

NAME.	LENGTH, FEET	BREADTH, FEET.
St. Peter's	613	450
St. Paul's	500	248
Duomo	[illegible]	240
Notre Dame	416	153
Cologne	444	282
Toledo	395	178
Rheims	[illegible]	163
Rouen	[illegible]	146
Chartres	[illegible]	150
Antwerp	384	171
Strasbourg	525	195
Milan	477	186
Canterbury	530	154
York	524	261
Winchester	554	208
Durham	411	170
Ely	517	178
Salisbury	473	229

Customs Tariff of Great Britain.

No protective duties are now levied on goods imported—customs duties being charged solely for the sake of revenue. Formerly the articles subject to duty numbered nearly a thousand; now they are only twenty-two—the chief being tobacco, spirits, tea and wine. The following is a complete list.

Articles	Duty. £	s.	d.
Ale or beer, specific gravity not exceeding 1065°, per bbl	0	8	0
Ale or beer, specific gravity not exceeding 1090°, per bbl	0	11	0
Ale or beer, specific gravity exceeding 1090°, per bbl	0	16	0
Beer, mum, per bbl	1	1	0
Beer, spruce, specific gravity not exceeding 1190° per bbl	1	1	0
Beer, spruce, specific gravity exceeding 1090°, per bbl	1	4	0
Cards, playing, per dozen packs	0	3	9
Chicory (raw or kiln dried), per cwt	0	13	3
Chicory (roasted or ground) per lb	0	0	2
Chloral hydrate, per lb	0	1	3
Chloroform, per lb	0	3	0
Cocoa, per lb	0	0	1
Cocoa husks and shells, per cwt	0	2	0
Cocoa paste and chocolate, per lb	0	0	2
Coffee, raw, per cwt	0	14	0
Coffee, kiln dried, roasted or ground, per lb	0	0	2
Collodion, per gallon	0	1	4
Essence of spruce, 10 per cent ad valorem			
Ethyl, iodine of, per gallon	0	13	0
Ether, iodine of, per gallon	0	1	5
Fruit, dried, per cwt	0	7	0
Malt, per quarter	1	4	0
Naptha purified, per gallon	0	10	5
Pickles, in vinegar	0	0	1
Plate, gold, per ounce	0	17	0
Plate, silver, per ounce	0	1	6
Spirits, brandy, Geneva rum, etc., per gallon	0	10	5
Spirits, rum, from British colonies, per gallon	0	10	2
Spirits, Cologne water	0	16	6
Tea, per lb	0	0	6
Tobacco, unmanufactured, per lb	0	3	1½
Tobacco, containing less than 10 per cent. of moisture, per lb	0	3	6
Tobacco, cavendish or negro-head, per lb	0	4	6
Tobacco, other manufactured, per lb	0	4	0
Snuff, containing more than 13 per cent. of moisture, per lb	0	3	9
Snuff, containing less than 13 per cent. of moisture, per lb	0	4	6
Tobacco, cigars, per lb	0	5	0
Varnish, containing alcohol, per gallon	0	12	0
Vinegar, per gallon	0	0	3
Wine containing less than 26 degrees proof spirit, per gallon	1	3	6
Wine containing more than 26 degrees and less than 42 degrees spirit, per gallon	0	2	6
Wine, for each additional degree of strength beyond 42 degrees, per gallon	0	0	3

Contagious and Eruptive Diseases.

It will often relieve a mother's anxiety to know how long after a child has been exposed to a contagious disease that there is danger the disease has been contracted. The following table from Conklin's Manual gives the *period of incubation*—or anxious period—and other information concerning the more important diseases:

Disease.	Symptoms usually appear.	Anxious period ranges from.	Patient is infectious.
Chicken-Pox	On 14th day	10-18 days	Until all scabs have fallen off.
Diphtheria	“ 2d day	2- 5 days	14 days after disappearance of membrane
Measles	“ 14th day	10-14 days	*Until scaling and cough have ceased
Mumps	“ 19th day	16-21 days	14 days from commencement
Rotheln	“ 14th day	12-20 days	10-14 days from commencement.
Scarlet Fever	“ 4th day	1- 7 days	Until all scaling has ceased
Small-Pox	“ 12th day	1-14 days.	Until all scabs have fallen off.
Typhoid Fever	“ 21st day	1-28 days	Until Diarrhea ceases.
Whooping-Cough.	“ 14th day	7-14 days	†Six weeks from beginning to whoop.

*In measles the patient is infectious three days before the eruption appears.

†In whooping cough the patient is infectious during the primary cough, which may be three weeks before the whooping begins.

The following points may help to determine the nature of a suspicious illness:

Rash or Erupt'n.	Appearance.	Disease.	Duration, in Days.	Remarks
Small rose pimples changing to vesicles	2d day of fever or after 24 hours' illness	CHICKEN-POX	6-7	Scabs form about 4th day of fever.
Diffuse redness and swelling.	2d or 3d day of illness	ERYSIPELAS		
Small red dots like flea bites	4th day of fever or after 72 hours' illness.	MEASLES	6-10	Rash fades on 7th day
Bright scarlet, diffused	2d day of fever or after 24 hours' illness.	SCARLET FEVER.	8-19	Rash fades on 5th day.
Small red pimples changing to vesicles, then pustules	3d day of fever or after 48 hours' illness.	SMALL-POX	14-21	Scabs from 9th or 10th day, fall off about 14th
Rose colored spots scattered	7th to 14th day	TYPHOID FEVER.	22 30	Accompanied by diarrhea

Climate and Rainfall of Foreign Cities.

Name of City.	Mean Annual Temperature	Annual Average Rainfall, Inches
Algiers	64.3	27
Amsterdam	49.9	
Astrakhan	50.1	6
Barcelona	63.0	
Berlin	48.2	24
Birmingham	48.2	
Bombay	81.3	75
Bordeaux	57.0	30
Brussels	50.7	29
Buenos Ayres	62.8	
Cairo	72.2	
Calcutta	82.4	76
Cayenne		116
Cherrapongee		610
Christiania	41.5	
Constantinople	56.5	
Copenhagen	46.6	19
Dublin	50.1	29
Edinburgh	47.1	38
Florence	59.2	41
Geneva	52.7	32
Genoa	61.1	47
Glasgow	49.8	44
Havana	79.1	91
Jerusalem	62.6	16
Lima	73.3	
Lisbon	61.4	27
London	50.8	25
Madrid	58.2	9
Manchester	48.8	36
Manila	78.4	
Maranham		277
Marseilles	58.3	23
Melbourne	57.0	29
Mexico	60.9	
Milan	55.1	38
Montreal	44.6	
Moscow	40.0	
Munich	48.4	
Naples	60.3	30
Paris	51.3	22
Prague	50.2	14
Quebec	40.3	
Quito	60.9	
Rio Janeiro	77.2	29
Rome	60.5	31
Rotterdam	51.0	23
St. Domingo	81.3	108
St Petersburg	39.6	17
Stockholm	42.3	20
Sydney	65.8	49
Valparaiso	64.0	
Venice	55.4	
Vera Cruz	77.0	180
Vienna	51.0	19
Warsaw	56.2	

NOTE—The mean annual temperature of the globe is 50° Fahrenheit. The average rainfall is 36 in.

A Horse Will Eat Per Day

The following amount if employed at heavy work.

Kind of Food.	Amt lbs
Hay	20
Oats	25

Antidotes for Poisons.

In cases where the other articles to be used as antidotes are not in the house, give two tablespoonfuls of mustard mixed in a pint of warm water. Also give large draughts of warm milk or water mixed with oil, butter or lard. If possible, give as follows

FOR BED-BUG POISON, BLUE VITRIOL, CORROSIVE SUBLIMATE, LEAD WATER, SALTPETRE, SUGAR OF LEAD, SULPHATE OF ZINC, RED PRECIPITATE, VERMILION,	Give Milk or White of Eggs, in large quantities.
FOR FOWLER'S SOLUTION, WHITE PRECIPITATE, ARSENIC,	Give prompt Emetic of Mustard and Salt tablespoonful of each, followed with Sweet Oil, Butter or Milk.
FOR ANTIMONIAL WINE, TARTAR EMETIC,	Drink warm water to encourage vomiting. If vomiting does not stop, give a grain of Opium in water.
FOR CARBONATE OF SODA, COPPERAS, COBALT,	Prompt Emetic, Soap or Mucilaginous drinks.
FOR OIL VITRIOL, AQUA FORTIS, BI-CARBONATE POTASSA, MURIATIC ACID, OXALIC ACID,	Magnesia or Soap, dissolved in water, every two minutes.
FOR CAUSTIC SODA, CAUSTIC POTASH, VOLATILE ALKALI,	Drink freely of water with Vinegar or Lemon Juice in it.
FOR CARBOLIC ACID,	Give Flour and Water or Glutinous drinks.
FOR CHLORAL HYDRATE, CHLOROFORM,	Pour cold water over the head and face, with artificial respiration, Galvanic Battery
FOR LAUDANUM, MORPHINE, OPIUM,	Strong Coffee, followed by Ground Mustard or Grease in warm water to produce vomiting. Keep in motion.
FOR NITRATE OF SILVER	Give common Salt in water.
FOR STRYCHNINE, TINCT. NUX VOMICA,	Emetic of Mustard or Sulphate of Zinc, aided by warm water.

Modes of Execution in Different Countries.

Country.	Mode.	Publicity.
Austria	Gallows	Public
Bavaria	Guillotine	Private
Belgium	Guillotine	Public
Brunswick	Axe	Private
China	Sword or cord	Public
Denmark	Guillotine	Public
Ecuador	Musket	Public
France	Guillotine	Public
Great Britain	Gallows	Private
Hanover	Guillotine	Private
Italy	Sword or gallows*	Public
Netherlands	Gallows	Public
Oldenburg	Musket	Public
Portugal	Gallows	Public
Prussia	Sword	Private
Russia	Musket gallows or sword	Public
Saxony	Guillotine	Private
Spain	Garrote	Public
Switzerland		
Fifteen Cantons	Sword	Public
Two Cantons	Guillotine	Public
Two Cantons	Guillotine	Private
United States (other than New York)	Gallows	Mostly private.

*Capital punishment abolished in 1876.

PARLIAMENTARY RULES.

The following is a Condensed Summary of Important Parliamentary Usage as Observed in Public Bodies.

Motion to Adjourn—Must be seconded;* cannot be amended; cannot be reconsidered; must not refer to main question; requires a majority vote; is not in order when another has the floor; if carried, postpones all further proceedings; time of next meeting can be changed after adjournment, if previously fixed.

Motion to Amend—Must be seconded; can be debated; allows reference to main question; yields to all motions except to indefinitely postpone; may be amended only once; not in order when another member has the floor; may be referred to a committee; may strike out words, add words, insert words, or substitute words; requires a majority vote; can be reconsidered after vote.

Motion to Amend an Amendment—Same rules, except that it cannot be amended.

Motion to Amend the Rules—Must be seconded; is debatable; does not allow reference to main question then under discussion; not in order when another is speaking; may be amended; requires a majority vote, unless special rules otherwise provide;† may be reconsidered after vote.

Motion to Appeal from Speaker's Decision—When relating to indecorum—Must be seconded; allows no reference to main question; is not debatable; cannot be amended; is in order at any time; requires a majority vote; may be reconsidered after vote. In other cases—In order at any time; must be seconded; does not allow reference to main question; is debatable; cannot be amended; requires a majority vote; can be reconsidered.

Motion to Call to Order—In order at any time when indecorum suggests it; needs no seconding; undebatable; allows of no reference to main question; cannot be amended; requires only a majority vote; vote can be reconsidered.

Motion to Refer to a Committee—Not in order when a member is speaking; must be seconded: is debatable; opens the main question to debate; may be amended; requires only a majority vote; vote may be reconsidered; may include instructions to the committee.

Motion to Recommit—Assembly may refuse committee report, when motion to recommit will be in order; must be seconded; opens the main question to debate; may be debated, may be amended; majority vote decides; vote may be reconsidered.

Motion to Extend Time for Debate—Not in order when a member has the floor; must be seconded; is undebatable; does not allow reference to main question; may be amended; requires only a majority vote; vote may be reconsidered.

Motion to Limit Debate—Not in order when a member is speaking, must be seconded; is undebatable, does not allow reference to main question; may be amended; requires a majority vote, which may be reconsidered.

Motion to Close Debate—Not in order when member has the floor; must be seconded; may be amended; does not allow reference to main question; not debatable; requires a majority vote; vote can be reconsidered.

Motion to Reconsider an Undebatable Question—May be moved and recorded while a member has the floor, but business in hand must not be interrupted by it; must be made same day the original vote was taken, and by member who voted with the majority; must be seconded; cannot be debated; does not allow reference to main question; cannot be amended; majority vote is sufficient; vote cannot be reconsidered.

Motion to Refer a Question—(See Motion to Commit; same rules apply.)

Motion for Committee to Rise—Not in order while member is speaking; must be seconded; not debatable; does not allow reference to main question; cannot be amended; requires only a majority vote; vote cannot be reconsidered.

"Shall the Question be Discussed?"—Question must first be introduced; objection to discuss it must then be made, before debate; motion to discuss is in order at any time; needs no seconding; cannot be debated; cannot be amended; does not allow reference to main question; requires a majority vote; vote may be reconsidered.

Motion to Make Subject a Special Order—Not in order when floor is occupied; must be seconded; can be debated; may be amended; does not allow reference to main question; requires a majority vote; vote can be reconsidered.

Motion to Substitute—Same rules as in Motion to Amend, to which the reader is referred.

Motion to Suspend the Rules—Not in order when a member is speaking; must be seconded; cannot be amended; not debatable; does not allow reference to main question; requires a majority vote; vote cannot be reconsidered.

Motion to Take from Table—Not in order when another has the floor; must be seconded; cannot be amended; does not allow reference to main question; is not debatable; requires only a majority vote; a vote in the affirmative cannot be reconsidered.

Motion to Take up Question out of its Proper Order—Not in order when the floor is occupied; must be seconded; cannot be amended; does not allow reference to main question; not debatable; requires a majority vote; can be reconsidered.

Motion to Withdraw a Motion—Not in order while a member is speaking; must be seconded; is not debatable; must not refer to main question; cannot be amended; requires only a majority vote; vote can be reconsidered.

Motions—Order of Precedence—(1) To fix time to adjourn; (2) To adjourn without day; (3) To take up the orders of the day; (4) To lie on the table; (5) For the previous question; (6) To postpone a measure or motion to a future time; (7) To refer a measure or motion to a committee; (8) To amend a motion or measure. (9) To postpone any question without specifying a certain time to take it up.

Motion for Leave to Speak after Breach of Indecorum—Not in order while the floor is occupied; must be seconded; does not allow reference to main question; cannot be debated; cannot be amended; requires only a majority vote, vote can be reconsidered.

Motion to Lie on the Table—Cannot be made until the floor is clear; must be seconded; does not allow reference to main question; cannot be debated or amended; only a majority vote required; affirmative vote cannot be reconsidered.

Objection to Consideration of a Question.—Must be made as soon as the question is introduced, although a member is speaking, and before it is debated; needs no seconding; is undebatable; cannot be amended; requires a majority vote, unless special rules prevent; vote may be reconsidered.

Motion for the Orders of the Day—Is in order although a member has the floor; need not be seconded; cannot be debated or amended; allows of no reference to main question; requires only a majority vote; vote may be reconsidered.

Motion to Postpone to a Definite Time—Not in order when a member has the floor; must be seconded; limited debate allowed only on the propriety of postponing; does not allow reference to main question; may be amended; requires only a majority vote; vote may be reconsidered.

Motion to Postpone Indefinitely—Not in order while a member is speaking; must be seconded; cannot be amended; is debatable, and opens main question to discussion; requires only a majority vote; vote may be reconsidered.

Motion for the Previous Question—Not in order while the floor is occupied; must be seconded; does not allow reference to the main question; cannot be amended; is undebatable; requires a majority vote; vote may be reconsidered.

Motions Relating to Priority of Business—Are not in order while a member is speaking; must be seconded; are undebatable; allow of no reference to main question; may be amended; require only a majority vote; vote can be reconsidered.

Questions of Privilege—Not in order while a member has the floor; motions must be seconded; are debatable; may be amended; do not allow a reference to main question; only a majority vote required; vote may be reconsidered.

Motion to Read Papers—Not in order while member is speaking; must be seconded; cannot be amended; cannot be debated; does not allow reference to main question; is decided by a majority vote; vote may be reconsidered.

Motion to Reconsider a Debatable Question—May be moved and entered on record while a member is speaking, but must not interrupt business in hand; must be made the same day the original vote was taken, and by one who voted on the successful side; must be seconded; may be debated; cannot be amended; opens main question to debate; requires only a majority vote; vote cannot be reconsidered.

True parliamentary law presumes that every motion is seconded, and saves time by not asking for the second.

† Two-thirds votes are only required under *special* rules—not general ones.

Value of Indian Meal.

As a food, **100** pounds of Indian meal is equal to the following:

Name of Article.	Amount in Pounds.
White Turnips	1,200
Beets	909
Cabbage	700
Carrots	700
Rye Straw	666
Ruta Bagas	625
Wheat Straw	500
Oat Straw	400
Corn Stalks	333
Timothy Hay	200
Barley	111
Rye	90
Oats	83
Wheat	76
Beans	60
Oil Cake	40

Weight of Lumber.

Different kinds of seasoned lumber contain the following number of pounds in 1,000 feet.

Kind of Lumber.	Pounds.
Pitch Pine	4,150
Maple	4,000
Beech	4,000
Hickory	3,960
Locust	3,800
Dogwood	3,960
Cherry	3,720
Walnut	3,690
Oak	3,675
Ash	3,550
Cypress	3,350
Elm	3,220
Chestnut	3,170
Red Pine	3,075
Poplar	3,056
Birch	2,950
Cedar	2,925
Yellow Pine	2,890
White Pine	2,880
Willow	2,780
Norway Spruce	2,670
Hemlock	2,350
Butternut	1,960

Decay of Stumps.

Kind of Stump.	Time of Decay in Years
Pine	200
Cedar	9 to 18
Hemlock	9 to 15
Spruce	7 to 14
Hickory	6 to 10
Maple	5 to 18
Oak	5 to 8
Ash	5 to 8

Lumber Required

To build a mile of board fence, ordinary width of board:

1 board high	2,640	feet
2 boards "	5,280	"
3 " "	7,920	"
4 " "	10,560	"
5 " "	13,200	"

Pounds Per Acre.

The following is about the number of pounds of each which may be grown on an acre:

Name.	Pounds Per Acre.
Mangel Wurzel	22,100
Parsnips	11,100
Cabbage	10,800
Turnips	8,500
Apples	8,500
Potatoes	7,600
Carrots	6,900
Pears	5,100
Hay	4,000
Onions	2,700
Cherries	2,000
Plums	2,100
Beans	2,200
Peas	1,900
Oats	1,800
Barley	1,650
Wheat	1,200
Hops	400

Average Shrinkage.

Considering dryage and rot, the following is the average shrinkage for six months from time of harvesting:

Name of Article.	Amount of Shrinkage.
Wheat	6 pr. ct
Corn	20 "
Potatoes	33 "

Strength of Rope.

Good hemp rope will bear the following weights, according to size:

Circumference.	Pounds.
1 inch	200
1¼ "	312
1½ "	450
1¾ "	612
2 "	800
2¼ "	1,012
2½ "	1,250
2¾ "	1,512

Nutrition in Wheat Flour.

Of **100** parts of wheat flour "Boussingault's scale of nutritive equivalents" shows how many parts of other foods it takes to equal the same. Thus:

Name of Food.	Number of Parts.
Turnips	1,335
White Cabbage	810
Carrots	777
Potatoes	313
Rice	177
Maize	130
Barley	130
Barley Meal	119
Oats	117
Rye	111
Buckwheat	108
Wheat	107
Wheat Flour	100
Peas	67
Beans	44

Age Attained by Birds.

Name of Bird.	Age Attained in Years.
Heron	80
Pelican	50
Sparrow Hawk	40
Skylark	30
Crane	24
Linnet	23
Nightingale	18
Lark	18
Blackcap	15
Goldfinch	15
Partridge	15
Pheasant	15
Robin	12
Blackbird	12
Thrush	10
Wren	3

Constituents of Milk.

Of **1,000** parts of milk there are various constituent substances as follows.

Constituents.	*Number.*
Water	840
Milk-Sugar	45
Butter	40
Caseine	40
Phosphate of Lime	17
Chloride Potassium	9
Phosphate Magnesia	4
Free Soda	3
Common Salt	3

Time of Germination.

An experiment with corn planted at various depths resulted in the young plant appearing above ground in the following number of days:

Depth inches	Days when appeared.
1	8½
1½	9½
2	10
2½	11½
3	13
4	13½

Per Cent. of Sweet.

Name of Article.	Per cent of Sweet
Sugar Cane	18
Sugar Beet	10
Sorghum	9½
Corn in Tassel	3¼
Maple Sap	2½

Cordwood Weights.

Wood weighs per cord, on the average, as follows:

Kind of Wood.	Wt per Cord.
Hickory	4,468
Ash	3,449
Red Oak	3,255
Beech	3,234
Hard Maple	2,864
Yellow Oak	[illegible]
Birch	2,368
Pitch Pine	1,903
Canada Pine	1,870
White Oak	1,870
Lombardy Poplar	1,775

Roman and Arabic Numerals.

Roman.	Arabic.	Roman.	Arabic.
I	1	DCC	700
II	2	DCCC	800
III	3	CM	900
IV	4	M	1,000
V	5	MM	2,000
VI	6	MMM	3,000
VII	7	IV	4,000
VIII	8	V	5,000
IX	9	VI	6,000
X	10	VII	7,000
XX	20	$\overline{VIII}$	8,000
XXX	30	$\overline{IX}$	9,000
XL	40	X	10,000
L	50	XX	20,000
LX	60	XXX	30,000
LXX	70	XL	40,000
LXXX	80	$\overline{L}$	50,000
XC	90	LX	60,000
C	100	$\overline{LXX}$	70,000
CC	200	LXXX	80,000
CCC	300	$\overline{XC}$	90,000
CD	400	$\overline{C}$	100,000
D	500	$\overline{M}$	1,000,000
DC	600	$\overline{MM}$	2,000,000

Growth of Trees.

According to observation of Illinois Horticultural Society the growth of different trees during 12 years was as follows:

Kind of Tree.	Diameter.	Ft. High
White Willow	1½ ft.	40
Yellow Willow	1½ ft.	35
Larch	8 in.	25
White Maple	1 ft.	20
Ash-Leaf Maple	1 ft.	20
White Ash	10 in.	20
Chestnut	10 in.	20
Black Walnut	10 in.	20
Butternut	10 in.	20
Elm	10 in.	20
Birch	10 in.	20

Education of Presidents.

Washington	Fair English education.
Adams	Harvard.
Jefferson	William and Mary
Madison	Princeton.
Adams, J. Q.	Harvard,
Jackson	Limited education
Van Buren	Academic course.
Harrison	Hampden College.
Tyler	William and Mary
Polk	University of N. C
Taylor	Slight rudiments.
Fillmore	Limited education
Pierce	Bowdoin.
Buchanan	Dickinson.
Lincoln	Education limited
Johnson	Self educated.
Grant	West Point.
Hayes	Kenyon College.
Garfield	Williams College.
Arthur	Union College.
Cleveland	Academic course
B Harrison	University course.

Number of Seeds

In a Pound.

Kind.	*Number.*
White Clover	686,400
Red Clover	249,640
Buckwheat	25,500
Rye	23,000
Oats	20,000
Barley	15,400
Wheat	10,500

Nutriment of Foods.

Kinds of Foods.	Per Ct. of Nutriment.	Time of Digestion
		hr. m.
Bread, baked	60	3 15
Rice, boiled	38	1 00
Beans, boiled	37	2 30
Mutton, roasted	30	3 15
Poultry, "	27	4 00
Beef, "	26	4 00
Veal, "	25	4 00
Pork, "	24	5 15
Venison, boiled	22	1 45
Fish, "	20	2 00
Potatoes, "	13	3 30
Apples, Raw	10	1 30
Cabbage, boiled	7	4 30
Turnips, "	4	3 30
Cucumber	2	

Armies of Different Nations.

Number of men in army and navy combined:

Country.	*No. of Men.*
Russia	1,000,984
Italy	754,743
France	552,000
Germany	461,316
Turkey	374,150
China	350,000
Austria-Hungary	296,321
Great Britain	191,010
British India	188,914
Switzerland	117,420
Spain	105,221
Netherlands	71,000
Persia	56,961
Sweden	47,200
Belgium	46,480
Japan	43,000
Portugal	37,981
United States	37,011
Denmark	36,840

Relative Worth of Foods.

Of **100** parts in the following foods it is estimated that each possesses properties as follows:

Names of Foods.	Per cent. of muscle-making.	Per ct. of heat and fat making.
Apples	5	10
Barley	15	69
Beans	24	57½
Beef	15	30
Buckwheat	8½	75½
Butter	-	95
Cabbage	4	5
Cheese	65	19
Chicken	18	32
Corn	12	73
Cucumbers	1½	1
Eggs, white	17	0
Eggs, yolk	15	27
Lamb	11	35
Milk	5	8
Mutton	12½	40
Oats	17	66½
Peas	23½	60
Pork	10	50
Potatoes	1½	22½
Rice	6½	79½
Turnips	1	4
Veal	10	16½
Wheat	14½	69½

Size of Animals.

Man—4 to 5 feet in Lapland and Labrador; 5½ to 6½ feet in Europe and Asia, 5 to 5½ in Africa and America; and 6 to 8 feet in Patagonia.

Name of Animal.	*Size.*
Fox	1⅓ to 2 feet
Mole	6 inches
Stag	4 to 5 feet
Wolf	2½ to 3 feet
Lion	6 to 8 and 9 feet
Otter	3¼ feet
Lynx	4 feet
Civet	2 feet
Sable	11 inches
Lama	6 feet
Tapir	6 feet
Hyena	3 feet
Jackal	2½ feet
Ferret	14 inches
Ermine	10 inches
Polecat	17 inches
Weasel	7½ inches
Badger	2½ feet
Giraffe	15 or 16 feet high
Marmot	10 inches
Roebuck	3¾ feet
Raccoon	2 feet
Vampire	6 to 12 inches

Name of Animal.	*Size.*
Wild Cat	2 to 5 feet
Antelope	3¼ feet
Chamois	3 feet
Opossum	15 to 18 inches
Dormouse	6 inches
Kangaroo	3 to 4 feet
Hedgehog	10 inches
Porcupine	2½ feet
Musk-Deer	3¼ feet
Ichneumon	15 inches
Maned Seal	10 to 14 feet
Pigmy Apes	2 feet
Barbary Ape	3½ feet
Common Bat	4 or 5 inches
Spectrum Bat	7 inches
Common Seal	4 to 6 feet
Hippopotamus	12 to 20 feet
Flying Squirrel	6 inches
Ourang Outang	4½ to 5½ feet
Great Ant-eater	4 feet
Pigmy Antelope	10 inches
Walrus or Morse	15 to 18 feet
Vaulting Monkey	13 inches
Bottle-nosed Seal	11 to 18 feet
Ordinary Squirrel	8 inches
Dog-faced Baboon	5 feet
Armadillo and tail	5 feet
Elephant	10 or 11 feet 8 to 11 feet high
Lioness	5 to 6 and 7 feet Tail 3 feet, height 3 to 5

Name of Animal.	*Size.*
Tiger	8 to 9 feet Tail 3 feet, height 4 feet
Ant-eater	1 foot Spines 4 feet
Dromedary	6 or 7 feet 9 feet high to top of head
Rhinoceros	12 feet 6 or 7 feet high

Tacks.

Nails.

[illegible]

Heights of Waterfalls.

NAME OF FALL.	WHERE LOCATED.	HEIGHT. FEET.
Cerosola Cascade	Alps, Switzerland	2,400
Yosemite Falls	California	1,500
Falls of Arve	Savoy	1,100
Virgin Tears Creek	Yosemite	1,000
Bridal Veil Fall	Yosemite	900
Lanterbaum	Lake Theen, Switzerland	900
Natchkikin Falls	Kamschatka	400
Falls of Terni	Near Rome	300
Montmorency Falls	Quebec, Canada	250
Fryer's	nr Lockness, Scotland	200
Niagara Falls	North America	164
Lidford Cascade	Devonshire, England	100
Genesee Falls	Rochester, N. Y.	96
Missouri Falls	North America	90
Waterfall Mountain Cascade	South Africa	85
Passaic Falls	New Jersey	71
Falls of St. Anthony	Upper Mississippi	60
Nile Cataracts	Upper Egypt	40
Tivoli Cascade	Near Rome	40

Amount of Food

Required per day for the average laboring man. Suppose the following articles are furnished he will consume about the quantity here mentioned:

Kind of Food.	*Amt. lbs.*
Flour	1½
Beef	⅝
Pork	1¼
Potatoes	½
Beans	¼
Onions	⅛
Salt Fish	⅛
Total	4⅜
Quantity of tea for each man, per m'th	1⅓
Coffee	2

Different Nations, the Name of their People and the Language they Speak.

Country.	Name of People.	Language they Speak.
Austria	Austrians	German, Hungarian and Slavonic.
Arabia	Arabs, Arabians	Arabic.
Afghanistan	Afghans	Persian and Hindoostanee.
Algeria	Algerines	Chiefly Arabic.
Abyssinia	Abyssinians	Abyssinian.
Australasia	Australasians	Dutch and English. Various native languages are spoken.
Brazil	Brazilians	Portuguese.
Bolivia	Bolivians	Spanish.
Belgium	Belgians	Flemish and French.
Beloochistan	Beloochees	Beloochee and Hindoostanee.
Canada	Canadians	English and French.
Chili	Chilians	Spanish.
China	Chinese	Chinese.
Denmark	Danes	Danish.
Egypt	Egyptians	Chiefly Arabic and Italian.
England	English	English.
East Indies	East Indians	Hindoostanee, Bengalee, Siamese, Malay, etc.
France	French	French.
Greenland	Greenlanders	Danish and Esquimaux.
Germany	Germans	German.
Greece	Greeks	Greek.
Holland	Dutch	Dutch.
Hindoostan	Hindoos	Hindoostanee and others.

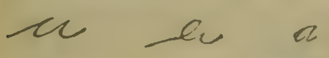
Country.	Name of People.	Language they Speak.
Iceland	Icelanders	Icelandic.
Ireland	Irish	English and Irish.
Italy	Italians	Italian.
Japan	Japanese	Japanese
Mexico	Mexicans	Spanish.
Norway	Norwegians	Danish.
Poland	Poles	Polish.
Peru	Peruvians	Spanish.
Paraguay	Paraguayans	Spanish.
Prussia	Prussians	German.
Portugal	Portuguese	Portuguese.
Persia	Persians	Persian.
Russia	Russians	Russian.
Sweden	Swedes	Swedish.
Switzerland	Swiss	German, French, and Italian.
Spain	Spaniards	Spanish.
Siberia	Siberians	Russian (mostly).
Siam	Siamese	Siamese.
Scotland	Scotch	English and Gaelic.
Turkey	Turks	Turkish.
United States	Americans	English.
Venezuela	Venezuelans	Spanish.
West Indies	West Indians	Spanish.
Wales	Welsh	English and Welsh.

MULTIPLICATION TABLE.

For the convenience of those who, though once familiar with the Multiplication Table, may have forgotten portions of it, or may not at the moment be able to recall the amount which results from one number being multiplied by another, this table is given. The × signifies *multiplied by*, and = signifies *equal to.*

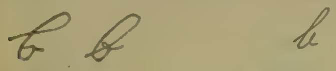
1 × 0 = 0	2 × 0 = 0	3 × 0 = 0	4 × 0 = 0	5 × 0 = 0	6 × 0 = 0	7 × 0 = 0	8 × 0 = 0	9 × 0 = 0	10 × 0 = 0	11 × 0 = 0	12 × 0 = 0
1 × 1 = 1	2 × 1 = 2	3 × 1 = 3	4 × 1 = 4	5 × 1 = 5	6 × 1 = 6	7 × 1 = 7	8 × 1 = 8	9 × 1 = 9	10 × 1 = 10	11 × 1 = 11	12 × 1 = 12
1 × 2 = 2	2 × 2 = 4	3 × 2 = 6	4 × 2 = 8	5 × 2 = 10	6 × 2 = 12	7 × 2 = 14	8 × 2 = 16	9 × 2 = 18	10 × 2 = 20	11 × 2 = 22	12 × 2 = 24
1 × 3 = 3	2 × 3 = 6	3 × 3 = 9	4 × 3 = 12	5 × 3 = 15	6 × 3 = 18	7 × 3 = 21	8 × 3 = 24	9 × 3 = 27	10 × 3 = 30	11 × 3 = 33	12 × 3 = 36
1 × 4 = 4	2 × 4 = 8	3 × 4 = 12	4 × 4 = 16	5 × 4 = 20	6 × 4 = 24	7 × 4 = 28	8 × 4 = 32	9 × 4 = 36	10 × 4 = 40	11 × 4 = 44	12 × 4 = 48
1 × 5 = 5	2 × 5 = 10	3 × 5 = 15	4 × 5 = 20	5 × 5 = 25	6 × = 30	7 × 5 = 35	8 × 5 = 40	9 × 5 = 45	10 × 5 = 50	11 × 5 = 55	12 × 5 = 60
1 × 6 = 6	2 × 6 = 12	3 × 6 = 18	4 × 6 = 24	5 × 6 = 30	6 × 6 = 36	7 × 6 = 42	8 × 6 = 48	9 × 6 = 54	10 × 6 = 60	11 × 6 = 66	12 × 6 = 72
1 × 7 = 7	2 × 7 = 14	3 × 7 = 21	4 × 7 = 28	5 × 7 = 35	6 × 7 = 42	7 × 7 = 49	8 × 7 = 56	9 × 7 = 63	10 × 7 = 70	11 × 7 = 77	12 × 7 = 84
1 × 8 = 8	2 × 8 = 16	3 × 8 = 24	4 × 8 = 32	5 × 8 = 40	6 × 8 = 48	7 × 8 = 56	8 × 8 = 64	9 × 8 = 72	10 × 8 = 80	11 × 8 = 88	12 × 8 = 96
1 × 9 = 9	2 × 9 = 18	3 × 9 = 27	4 × = 36	5 × 9 = 45	6 × 9 = 54	7 × 9 = 63	8 × 9 = 72	9 × 9 = 81	10 × 9 = 90	11 × 9 = 99	12 × 9 = 108
1 × 10 = 10	2 × 10 = 20	3 × 10 = 30	4 × 10 = 40	5 × 10 = 50	6 × 10 = 60	7 × 10 = 70	8 × 10 = 80	9 × 10 = 90	10 × 10 = 100	11 × 10 = 110	12 × 10 = 120
1 × 11 = 11	2 × 11 = 22	3 × 11 = 33	4 × 11 = 44	5 × 11 = 55	6 × 11 = 66	7 × 11 = 77	8 × 11 = 88	9 × 11 = 99	10 × 11 = 110	11 × 11 = 121	12 × 11 = 132
1 × 12 = 12	2 × 12 = 24	3 × 12 = 36	4 × 12 = 48	5 × 12 = 60	6 × 12 = 72	7 × 12 = 84	8 × 12 = 96	9 × 12 = 108	10 × 12 = 120	11 × 12 = 132	12 × 12 = 144

SMALL LETTERS CONTRASTED, SHOWING PROBABLE FAULTS. RIGHT AND WRONG.



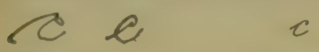
Wrong. **Right.**

1st *a* is not closed at the top. It resembles a *u*. 2nd *a* contains a loop and resembles an *e*.



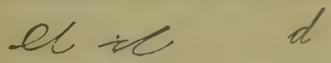
Wrong. **Right.**

1st *b* is crooked. 2nd *b* has a loop too long.



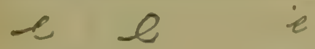
Wrong. **Right.**

1st *c* has the connecting line too high. 2nd *c* has a loop too large, causing it to resemble the *e*.



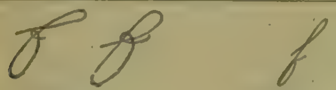
Wrong. **Right.**

1st *d* contains a loop at the bottom. 2nd *d* slopes too much.



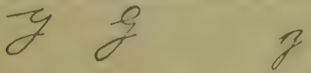
Wrong. **Right.**

1st *e*, loop too small. 2nd *e*, loop too large.



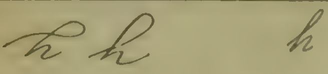
Wrong. **Right.**

1st *f* is crooked. 2nd *f* has a loop too long, top and bottom



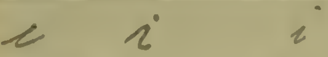
Wrong. **Right.**

1st *g* is left open at the top. It resembles a *y*. 2nd *g* contains a loop at the top.



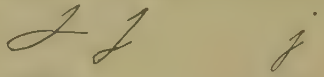
Wrong. **Right.**

1st *h* is crooked. 2nd *h* has a loop too long.



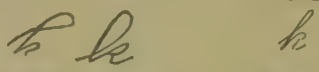
Wrong. **Right.**

1st *i* has no dot, and the lines unite too low. 2nd *i* has the dot too near the letter; the lines are not sufficiently united.



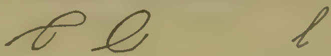
Wrong. **Right.**

1st *j* is crooked and contains too much loop at the bottom. 2nd *j*, loop too short.



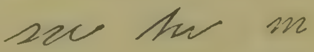
Wrong. **Right.**

1st *k* resembles an *h* and is crooked. 2nd *k*, loop too long; lower part spreads too much.



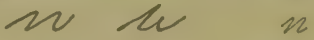
Wrong. **Right.**

1st *l* is crooked. 2nd *l*, loop too broad and too long.



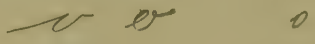
Wrong. **Right.**

1st *m* lacks uniformity of slope and appearance. 2nd *m* lacks uniformity of height, and too angular.



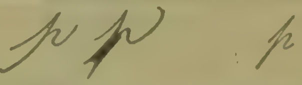
Wrong. **Right.**

1st *n* lacks uniformity of slope. 2nd *n* resembles a *u* with first part too high.



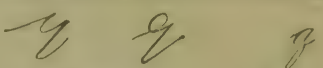
Wrong. **Right.**

1st *o* is left open at the top and resembles a *v*. 2nd *o* contains a loop.



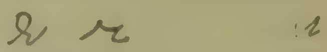
Wrong. **Right.**

1st *p* is crooked. 2nd *p* has been patched and is badly shaded.



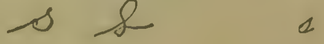
Wrong. **Right.**

1st *q* is left open at the top. 2nd *q* contains a loop in the top.



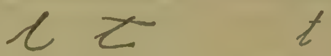
Wrong. **Right.**

1st *r* contains a loop. 2nd *r* is too flat.



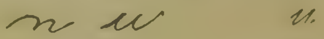
Wrong. **Right.**

1st *s* is too short. 2nd *s* contains a loop, top and bottom.



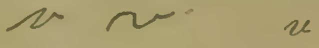
Wrong. **Right.**

1st *t*, not crossed, is too round at the bottom, with bad connecting line. 2nd *t* slopes too much.



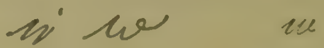
Wrong. **Right.**

1st *u* resembles an *n*. 2nd *u* is irregular in height.



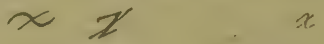
Wrong. **Right.**

1st *v* is too angular at the top and bottom. 2nd *v* spreads too much.



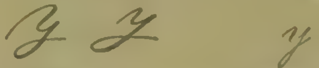
Wrong. **Right.**

1st *w* is too angular. 2nd *w* is irregular in height.



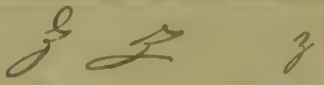
Wrong. **Right.**

1st *x* is spread too much. 2nd *x* is too angular.



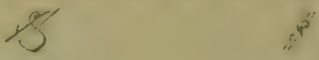
Wrong. **Right.**

1st *y* is too high in the first part. 2nd *y* slopes too much.



Wrong. **Right.**

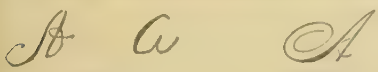
1st *z* has a loop at the top. 2nd *z* slopes too much.



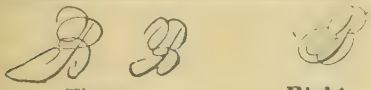
Wrong. **Right.**

The dollar mark should have parallel lines being crossed by a character similar to the letter *S*.

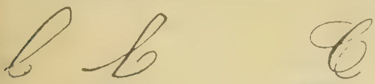
CAPITALS CONTRASTED, SHOWING PROBABLE FAULTS. RIGHT AND WRONG.



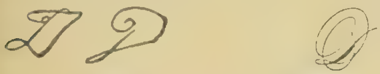
1st *A* is too broad at the top. 2nd too much resembles the small *a*.



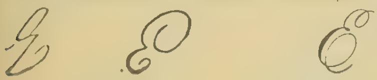
1st *B* has a bad capital stem. 2nd *B*, like the first, is too large at the top.



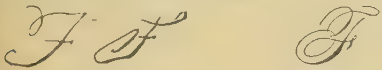
1st *C* has the loop too large, with base too small. 2nd *C* contains an angle.



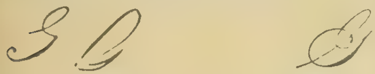
1st *D* contains several angles. 2nd *D* is out of proportion.



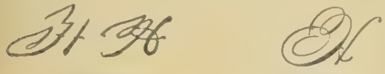
1st *E* contains angles. 2nd *E*, out of proportion by being too large at the top.



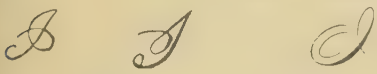
1st *F* has the top too far to the left. 2nd *F* contains both a bad top and capital stem.



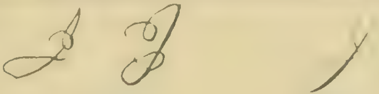
1st *G* is too small at the top. 2nd *G* is too large at the top



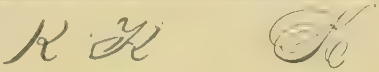
1st *H* has a bad capital stem. 2nd *H* resembles an *X*



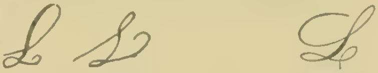
1st *I* is too broad, and has the loop too large. 2nd *I* has a bad capital stem.



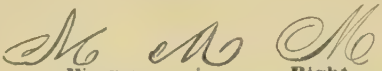
1st *J* is crooked. 2nd *J* is too broad at the top, and contains a bad loop at the bottom.



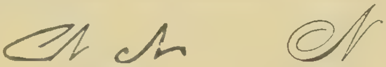
1st *K* has a bad capital stem. 2nd *K* has an angular capital stem, and spreads too much.



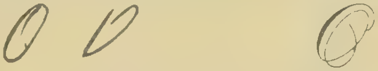
1st *L* loop too large in upper part. 2nd *L* has the loop in the top too small.



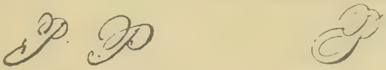
1st *M* spreads too much at the top and has a bad capital stem. 2nd *M* is too close at the top, has a bad capital stem, the last *O* part spreading too much.



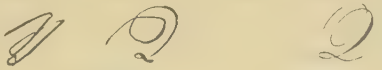
1st *N* has a bad capital stem, being too long and angular. 2nd *N* is out of proportion by spreading too much at the top.



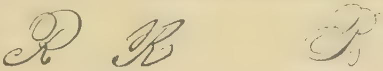
1st *O* is too slim. 2nd *O* contains an angle at both top and bottom.



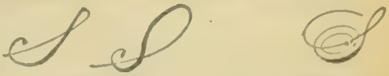
1st *P* is too small at the top. 2nd *P* has the top too large.



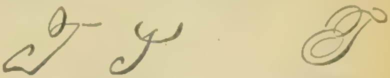
1st *Q* contains angles. 2nd *Q* is too large at the top.



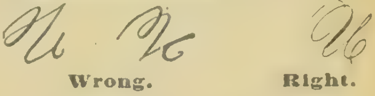
1st *R* is too large at the top. 2nd *R* contains angles.



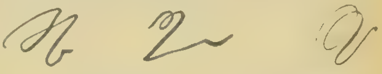
1st *S* has the loop too small at the top. 2nd *S* has the loop too large at the top.



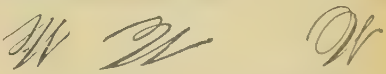
1st *T* has a bad capital stem. 2nd *T* has a bad top.



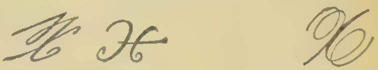
1st *U* contains angles in the upper part. 2nd *U* spreads too much at the top.



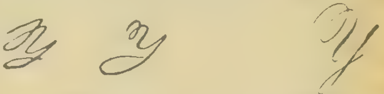
1st *V* contains angles. 2nd *V* spreads too much at the top.



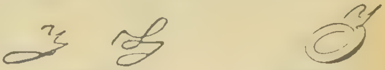
1st *W* contains angles in the upper portion of the first of the letter. 2nd *W* is out of proportion by having too much slope.



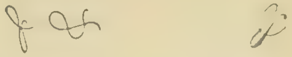
1st *X* contains several angles where there should be none. 2nd *X* is spread too much.



1st *Y* has the top too long. 2nd *Y* is too small at the top.



1st *Z* resembles a small letter *y*. 2nd *Z* is also illegible.



1st character & is too slim. 2nd character spreads too much. Both slope badly.

"Poetry is the blossom and fragrance of all human knowledge, human thoughts, human passions, emotions, language."—COLERIDGE.

The GENTLE stillness of a spring-time evening, when, with heart attuned to the glories of the twilight scene, we listen enraptured to the closing song of busy nature, hushing to repose — *this is poetry!*

The coming storm, preceded by the rushing wind; the dark, angry, approaching clouds, capped with the flashing, darting lightning, with the low muttering, and anon the deep-toned thunder, coming nearer and nearer in its awful grandeur! To the lover of the grand and sublime — *this is poetry!*

The silvery quiet of the moonlight night, when we wander amid the jessamines and roses, with our darling, whispering words of love, and dreaming of the future — *this is poetry!*

The midnight hour in the attic, when, through the crevices of the roof and windows, we catch glimpses of the flashing lightning, and listen, slumber, and dream to the music of the pattering rain-drops on the roof — *this is poetry!*

The roaring cataract, the silvery rivulet, the towering mountain, the dark ravine, the opening rosebud, the cherub child, the waving grain, the modest violet, — *all breathe the music of poetry!*

The beautiful face, the gentle, thrilling pressure of the hand, the kettle singing for tea, the joyous meeting of the husband and wife on the return from labor at the twilight hour, the smile, the kiss — *all this is poetry!*

It flashes in the sky, it blossoms on the earth, it breathes music in the air, delighting the eye, charming the ear, and filling the soul with ineffable happiness — *all this is poetry!*

To appreciate, to comprehend, and to interpret this golden, sunny halo of beauty, is the gift of the poet.

Poetry is not necessarily told in rhyme. It is oftentimes revealed as beautifully in prose. B. F. Taylor illustrates this very strikingly in the following description of

The Old Church.

"Last evening we were walking leisurely along. The music of choirs in three churches came floating out into the darkness around us, and they were all new and strange tunes but one; and that one, it was not sung as we had heard it, but it awakened a train of long buried memories, that rose to us even as they were before the cemetery of the soul had a tomb in it. It was sweet old 'Corinth' they were singing — strains that we have seldom heard since the rose-color of life was blanched — and we were in a moment back again to the old church; and it was a summer afternoon, and yellow sunbeams were streaming through the west windows, and the silver hair of the old deacon who sat in the pulpit was turned to gold in its light, and the minister, who, we used to think, could never die, so good was he, had concluded 'application' and 'exhortation,' and the village choir were singing the last hymn, and the tune was 'Corinth.'

"It is years — we dare not think how many — since then, and the prayers of 'David the son of Jesse' are ended, and the choir scattered and gone — the girl with blue eyes that sang alto, and the girl with black eyes that sang air; the eyes of one were like a June heaven at noon, and the other like the same heaven at night. They both became wives, and both mothers, and both died. Who shall say they are not singing 'Corinth' still, where Sabbaths never wane, and congregations never break up? There they sat, Sabbath after Sabbath, by the square column at the right of the 'leader,' and to our young ears their tunes were 'the very soul of music.' That column bears still their penciled names, as they wrote them in those days in life's June, 183—, before dreams of change had overcome their spirits like a summer's cloud.

"Alas! that with the old singers most of the sweeter tunes have died upon the air! But they linger in memory, and they shall yet be sung in the sweet reunion of song that shall take place by and by, in a hall whose columns are beams of morning light, whose ceiling is pearl, whose doors are gold, and where hearts never grow old. Then she that sang alto, and she that sang air, will be in their places once more."

More frequently, however, the poet gives expression to his emotions in rhyme, such form of expression having the advantage of musical sound, accompanied by sentiment. Unfortunately, however, much of that which passes for poetry is but rhyme, being devoid of sense or moral.

For the assistance and guidance of those who would correctly write poetry, we give herewith the rules of versification, accompanied by a vocabulary of rhymes, followed by a number of standard poems from the best authors, that are models in their respective kinds of verse.

Versification.

VERSIFICATION is the art of making verse. Verse is rhythmical language, keeping time like music; having syllables arranged according to accent, quantity, and generally rhyme; being so divided into lines as to promote harmony.

Two kinds of verse are in use by poets, namely, *blank verse* and *rhyme*. Rhyme is characterized by a similarity of sound at the end of one line with another; as

"Perhaps in this neglected spot is . . . . laid
Some heart once pregnant with celestial . . . fire;
Hands, that the rod of empire might have . . swayed,
Or waked to ecstasy the living . . . . lyre."

"The Assyrian came down like a wolf on the . . fold,
And his cohorts were gleaming with purple and gold."

Blank Verse.

Blank verse is the name given to a kind of poetry without rhyme, which was the form that the earlier poets almost entirely made use of. The poetry of the Greeks and Romans was generally without rhyme, and not until the Middle Ages, when introduced by the Goths from the North, did rhyme come into the Latin and the vernacular tongues of modern Europe.

Blank verse is particularly suited to the drama, and was very popular in the sixteenth century, during which time, and the beginning of the seventeenth century, Shakespeare wrote his plays. The following from Milton's "Paradise Lost" representing Eve's lament and farewell to Eden, written in 1667, illustrates the power of expression in blank verse:

"O unexpected stroke, worse than of death!
Must I thus leave thee, Paradise? thus leave
Thee, native soil! these happy walks and shades,
Fit haunt of gods? where I had hoped to spend,
Quiet though sad, the respite of that day
That must be mortal to us both. O, flowers
That never will in other climate grow,
My early visitation and my last
At even, which I bred up with tender hand
From the first spring bud, and gave ye names!
Who now shall rear thee to the sun, or rank
Your tribes, and water from the ambrosial fount?
Thee lastly, nuptial bower? by me adorn'd
By what to sight or smell was sweet! from thee
How shall I part, and whither wander down
Into a lower world, to this obscure
And wild? How shall we breathe in other air
Less pure, accustom'd to immortal fruits?"

Accent and Feet.

Upon careful observation, it will be seen that we involuntarily divide a line of rhythmical verse into meter, by a sort of keeping time with hands and *feet:* accenting at regular intervals certain syllables, thus giving the peculiar musical accompaniment which makes poetry attractive.

There are four kinds of feet in English verse called *Iambus*, *Trochee*, *Anapest* and *Dactyl.* The distinguishing characteristic of *Iambic* verse is, that we always accent the second syllable in reading the same; as " Behóld, how gréat."

The *Trochee*, like the Iambus, consists of two syllables, with the accent on the first syllable; as " Sée the dístant fórest dárk and wáving."

The *Anapest* has the first two syllables unaccented, and the last accented; as " O'er the lánd of the frée and the hóme of the bráve."

The *Dactyl* contains three syllables, with the accent on the first; as *dúrable*, *brávery.*

Meters.

Verse is also named according to the *number* of feet in each line; a foot in Iambic being two syllables. *Monometer* is a line of one foot; *dimeter*, of two feet; *trimeter*, of three feet; *tetrameter*, of four feet; *pentameter*, of five feet; *hexameter*, of six feet; *heptameter*, of seven feet; *octometer*, of eight feet.

Examples.

The following examples represent the *Iambic*, *Trochaic*, *Anapestic*, and *Dactylic*, in the different kinds of *meter.* A straight line (¯) over a syllable, shows that such syllable is accented. A curved line (˘) indicates the unaccented.

IAMBIC.—*One foot.*

" Thĕy go
To sow."

IAMBIC.—*Two feet.*

" Tŏ mē | thĕ rōse
No longer glows,"

" Thĕir lōve | ănd âwe
Supply | the law."

IAMBIC.—*Three feet.*

" Blúe light | nīngs sīnge | thĕ wāves.
And thunder rends the rock."

IAMBIC.—*Four feet.*

" Ănd cōld | ĕr stīll | thĕ wīnds | dīd blōw,
And darker hours of night came on."

IAMBIC.—*Five feet.*

" Fŏr prāise | tŏo dēar | lў lōv'd | ŏr wārm | lў sōught,
Enfeebles all internal strength of thought."

IAMBIC.—*Six feet.*

" Hĭs heārt | ĭs sâd, | hĭs hōpe | ĭs gōne, | hĭs light | ĭs pássed;
He sits and mourns in silent grief the lingering day."

IAMBIC.—*Seven feet.*

" Thĕ lōf | ty hĭll, | thĕ hūm | blĕ lāwn, | wĭth cōunt | lĕss
beaū | tĭes shīne ;
The silent grove, the solemn shade, proclaim thy power divine."

NOTE.—It has become common in writing modern poetry to divide this kind of verse into four lines; alternate lines having four and three feet; thus,—

" The lofty hill, the humble lawn,
With countless beauties shine;
The silent grove, the solemn shade,
Proclaim thy power divine."

IAMBIC.—*Eight feet.*

O āll | yĕ pēo | plĕ, clāp | yŏur hānds, | ănd wĭth | trĭum |
phănt vōic | ĕs sīng ;
No force the mighty pow'r withstands of God the universal
King.

NOTE.—It is common at present to reduce this verse into lines of eight syllables, as follows,—

" O all ye people, clap your hands,
And with triumphant voices sing,
No force the mighty pow'r withstands
Of God the universal King."

Stanza—Long, Short, and Common Meter.

A *stanza* is a combination of several lines in poetry, forming a distinct division of the poem; thus,—

" The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea;
The ploughman homeward plods his weary way,
And leaves the world to darkness and to me."

A Verse.

Verse is but a single line of a stanza, thus,—

" The curfew tolls the knell of parting day."

Long Meter.

The long, short, and common meters are known by the number of feet or syllables found in them. Long meter stanzas contain in each line four Iambic feet, thus —

"Through every age, eternal God
Thou art our rest, our safe abode,
High was thy throne ere heaven was made,
Or earth, thy humble footstool, laid."

Short Meter.

Short meter stanzas contain three lines of six syllables, and one of eight syllables — the third line being the longest, and containing four Iambic feet, thus —

"Sweet is the time of Spring,
When nature's charms appear;
The birds with ceaseless pleasure sing
And hail the opening year."

Common Meter.

Iambic verse of seven feet, divided into two lines, the first containing four, and the latter three feet, makes what is known as common meter; thus —

"When all thy mercies, O, my God.
My rising soul surveys,
Transported with the view, I 'm lost
In wonder, love, and praise."

Each species of Iambic verse will admit of an additional short syllable; as

Ŭpōn ă mōunt | ăin.
Bĕsīde ă fōunt | ăin.

Trochaic Verse.

The accent in *Trochaic* verse occurs on the first syllable. The foot consists of two syllables.

TROCHAIC.—*One foot.*

Chāngĭng.
Ranging.

TROCHAIC.—*Two feet.*

Fancy̆ | viēwĭng,
Joys ensuing.

TROCHAIC.—*Three feet.*

"Whēn thy̆ | heārt ĭs | mōurnĭng."
"Go where comfort waits thee."

TROCHAIC.—*Four feet.*

"Rōund ă | hōly̆ | cālm dĭf | fūsĭng,
Love of peace and lonely musing."

TROCHAIC.—*Five feet.*

Ȧll thăt | wālk ŏn | fōot ŏr | rīde ĭn | chārĭŏts,
All that dwell in palaces or garrets.

TROCHAIC.— *Six feet.*

Ōn ă | mōuntăin | strētch'd bĕ | nēath ă | hōary̆ | wĭllŏw.
Lay a shepherd swain and viewed the roaring billow.

TROCHAIC.— *Seven feet.*

Hāstĕn | Lōrd tŏ | rēscŭe | mē, ănd | sēt mĕ | sāfe frŏm
trōublĕ.
Shame thou those who seek my soul, reward their mischief
double.

TROCHAIC.—*Eight feet.*

NOTE.— Trochaic and Iambic are frequently found combined in one stanza.

Ōnce ŭp | ōn a | mĭdnight | drēary | whīle I | pōndered | wēak
and | wēary
Over many a quaint and curious volume of forgotten lore.

Anapestic Verse.

Anapestic verse contains three syllables to the foot, with the accent on the last syllable.

ANAPESTIC.— *One foot.*

"Ŏn thĕ lānd,
Lĕt mĕ stānd."

ANAPESTIC.— *Two feet.*

"Bŭt hĭs coūr | ăge 'găn fāil,
Fŏr nŏ ārts cŏuld ăvāil."

This form admits of an additional short syllable; as

"Bŭt hĭs coûr | ăge găn fāil | hĭm,
For no arts could avail him."

ANAPESTIC.— *Three feet.*

Ō yĕ wōods | sprĕad yŏur brānch | ĕs ăpâce,
Tŏ yŏur deēpĕst rĕcēssĕs I hīe;
I wŏuld hīde wĭth thĕ bēasts ŏf thĕ chāse,
I wŏuld vānĭsh frŏm ēvĕry̆ ēye

ANAPESTIC.—*Four feet.*

Măy Ĭ gōv | ĕrn my̆ pâss | iŏns wĭth âb | sŏlŭte swây,
Ănd grŏw wisĕr ănd bĕttĕr ăs lĭfe weărs ăwây.

This measure admits of a short syllable at the end ; as

Ŏn thĕ wārm | cheĕk ŏf yoûth | smĭles ănd rō | sĕs ăre blēnd
| ĭng.

Dactylic Verse.

In *Dactylic* verse the accent occurs on the first syllable of each successive three, being on the first, fourth, seventh, and tenth syllables.

DACTYLIC.—*One foot.*

Chēerfully̆,
Fearfully.

DACTYLIC.—*Two feet.*

Fāthĕr ăll | glōrĭoŭs
O'er all victorious.

DACTYLIC.—*Three feet.*

Weārĭng ă | wāy ĭn hĭs | yoûthfŭlnĕss,
Loveliness, beauty, and truthfulness.

DACTYLIC.—*Four feet.*

" Bōys wĭll ăn | tĭcĭpăte, | lăvĭsh ănd | dĭssĭpăte,
Āll thăt yoŭr būsy̆ păte hōardĕd wĭth cāre ;
And, in their foolishness, passion, and mulishness,
Charge you with churlishness, spurning your pray'r."

DACTYLIC.—*Five feet.*

" Nōw thŏu dŏst | wēlcŏme mĕ, | wēlcŏme mĕ, | frōm thĕ dărk
| sēa,
Land of the beautiful, beautiful land of the free."

DACTYLIC.— *Six feet.*

" Tĭme, thŏu ărt | ēvĕr ĭn | mōtiŏn, ŏn | whēels ŏf thĕ | dāys,
yĕars, ănd | āges,
Restless as waves of the ocean, when Eurus or Boreas rages."

DACTYLIC.— *Seven feet.*

" Oūt ŏf thĕ | kĭngdŏm ŏf | Chrĭst shăll bĕ | găthĕrĕd, by |
ăngĕls ŏ'er Sātăn vĭctōrĭoŭs,
All that offendeth, that lieth, that faileth to honor his name
ever glorious."

DACTYLIC.— *Eight feet.*

Nĭmrŏd thĕ | hûntĕr wăs | mighty ĭn | hûntĭng, ănd | fāmed ăs
thĕ | rūlĕr ŏf | cĭtĭes ŏf | yōre ;
Babel, and Erech, and Accad, and Calneh, from Shinar's fair
region his name afar bore.

Other Kinds of Poetical Feet.

Besides the foregoing there are other kinds of feet that sometimes occur. These are named the *pyrrhic*, the *spondee*, the *amphibrach*, and the *tribrach*. The *pyrrhic* consists of two short and the *spondee* of two long syllables. The *amphibrach* contains three syllables, of which the first and third are short and the second long. The *tribrach* consists of three short syllables.

Examples.

PYRRHIC.— " Ŏn thĕ tall tree."
SPONDEE.— " The pâle mōōn."
AMPHIBRACH. — " Dĕlightfŭl, Dŏmĕstĭc."
TRIBRACH.—" Nūmĕrăblĕ, cōnquĕrăblĕ."

Poetical Pauses.

The full effect in reading poetry is most completely given when a slight pause is made at the close of every line, even though the sense may not require a pause. Frequently a pause for sense is found in or near the middle of the line, particularly of long lines, in which it improves the rhythm, and brings out the meaning of the poem with much better effect. This pause is called the *cæsural* pause, and is shown in the following examples.

Cæsural Pause.

On her white breast | a sparkling cross she wore—
Which Jews might kiss | and infidels adore.
Her lively looks | a sprightly mind disclose,
Quick as her eyes | and as unfixed as those ;
Favors to none, | to all she smiles extends,
Oft she rejects, | but never once offends.

" Then her cheek | was pale, and thinner | | than should be |
for one so young ;
And her eyes, | on all my motions, | | with a mute observance
hung."

The *final pause* occurs at the end of each line whether the sense requires it or not, though it should not be too distinctly marked, as it consists merely in a brief suspension of the voice without any change in tone or accent. The following example shows its effect.

Final Pause.

Ye who have anxiously and fondly *watched*
Beside a fading friend, unconscious *that*
The cheek's bright crimson, lovely to the view,
Like nightshade, with unwholesome beauty bloomed.

Varieties of Poetry.

SEVERAL leading kinds of poetry are named as follows: *Epic*, *Dramatic*, *Lyric*, *Elegiac*, *Pastoral*, *and Didactic*.

Epic Poetry.

Epic poetry pertains to the narrative, descriptive, and heroic in character, and is the highest and most difficult of poetry to write well. Among the best of the Epic poems may be mentioned, Homer's "*Iliad*" in Greek, Virgil's "*Æneid*" in Latin, and Milton's "Paradise Lost" in English.

Dramatic Poetry.

Dramatic poetry is also an elevated species of poetry, and takes nearly equal rank with the Epic. This kind of poetry includes the dramas, tragedies, comedies, melodramas, and operas.

Lyric Poetry.

Lyric poetry, as its name indicates, was the kind of verse originally written to be sung as an accompaniment to the lyre. This class of poetry is the oldest in the language of all nations, comprising, as it does, the songs of the people. In the Lyric are included the Songs, Hymns, Odes, and Sonnets.

Elegiac Poetry.

Elegiac poetry includes the elegies, such as Milton's "Lycidas," Tennyson's "In Memoriam," and poems of grave, solemn, and mournful character. Gray's "Elegy, Written in a Country Churchyard" is undoubtedly the most complete specimen of this class of poetry to be found in any language.

Pastoral Poetry.

In the early history of the world, throughout certain portions of Europe, a distinct occupation was that of the shepherd, whose duty was to care for the flocks, as they roamed in the valleys and among the hills. Leading thus a life of dreamy ease among the charms of nature, the shepherds of better culture took readily to the writing of verse, which poetry, usually descriptive of rustic life, became known as Pastoral poetry.*

This class of poetry includes the poems that relate to country scenes, and the quiet, the simplicity, and the happiness found in rural life.

Of these may be included, in modern poems, "The Old Oaken Bucket," "The Sower," "Twenty Years Ago," "Maud Muller," and others of like character.

Didactic Poetry.

Didactic poetry pertains chiefly to the meditative and instructive, and includes such poems as Bryant's "Thanatopsis," Campbell's "Pleasures of Hope," Thomson's "Seasons," Pope's "Essay on Man," and kindred poems.

Kinds of Poems.

VARIOUS kinds of poems are known by certain names, which are defined as follows:

Odes.—Sacred hymns, such as are sung in church.

Pæans.—Songs of praise and triumph.

Ballads.—An easy form of descriptive verse, written in such style as to be easily sung by the people, who may have little acquaintance with music.

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* From the Latin word *pastor*, a shepherd.

Epigrams.— A short poem, witty and concise, treating of a single subject, usually ending with an unexpected, ingeniously expressed natural thought.

Sonnets.— The Sonnet is a poetical composition, consisting of fourteen lines, so constructed that the first eight lines shall contain but two rhymes, and the last six but two more; and so arranged that, in the first part, the first line is made to rhyme with the fourth, fifth, and eighth —the second rhyming with the third, sixth, and seventh, while in the second part, the first, third, and fifth; and the second, fourth, and sixth also rhyme with each other, as shown in the following:

Autumn.

" The blithe birds of the summer tide are flown;
Cold, motionless, and mute, stands all the wood,
Save as the restless wind, in mournful mood,
Strays through the tossing limbs with saddest moan.
The leaves it wooed with kisses, overblown
By gusts capricious, pitiless and rude,
Lie dank and dead amid the solitude;
Where-through it waileth, desolate and lone.
But with a clearer splendor sunlight streams
Athwart the bare, slim branches; and on high
Each star, in Night's rich coronal that beams,
Pours down intenser brilliance on the eye;
Till dazzled Fancy finds her gorgeous dreams
Outshone in beauty by the autumn sky."

Cantatas.—The Cantata is a musical composition, partaking of the nature of an anthem, being intermixed with airs and recitatives; and may be adapted to a single voice, or many.

Charades. The Charade may be in either prose or poetry, and contains as a subject a word of two syllables, each forming a distinct word; these to be concealed in an enigmatical description, first separately and then together.

Canzonets.—A short song consisting of one, two, or three parts is termed a Canzonet. The following, of two parts, is an illustration.

BLACK EYES AND BLUE.

Black eyes most dazzle in the hall;
Blue eyes most please at evening fall.
The black a conquest soonest gain;
The blue a conquest most retain;
The black bespeak a lively heart
Whose soft emotions soon depart;
The blue a steadier flame betray,
That burns and lives beyond a day;
The black may features best disclose;
In blue may feelings all repose;
Then let each reign without control,
The black all MIND — the blue all SOUL.

Epitaphs.—An Epitaph is usually a stanza in poetry, which follows the inscription on a tombstone.*

Satires. — The Satire is a poem used in exposing folly and wickedness, in keen, cutting words; holding the same up to ridicule and contempt.

Parodies.—A ludicrous imitation of a serious subject, usually in rhyme, is termed a Parody, as follows —

" Hands that the rod of empire might have swayed —
Close at my elbow stir their lemonade."

Prologues.—The Prologue is a short poem, introductory to a play or discourse, usually recited before the performance begins.

Epilogues.—The Epilogue is a short poem, which frequently reviews the principal incidents of the play, delivered by one of the actors at the close of a dramatic performance.

Impromptus.—An Impromptu is a poetical composition, made at the moment, without previous study.

Acrostics.—An Acrostic is a stanza of several lines, the first letters of which, taken in their order from top to bottom, make a word or sentence.

Friendship, thou 'rt false! I hate thy flattering smile!
Return to me those years I spent in vain,
In early youth, the victim of thy guile,
Each joy took wing, ne'er to return again —
Ne'er to return; for, chilled by hopes deceived,
Dully the slow-paced hours now move along;
So changed the time, when, thoughtless, I believed
Her honeyed words, and heard her syren song.
If e'er, as me, she lure some youth to stray,
Perhaps, before too late, he 'll listen to my lay.

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* See chapter on Epitaphs.

Vocabulary of Rhymes.

The Poet's Assistant in Finding Words that Rhyme.

AMONG the gems of literature that will live longest in the history of the world, will be various beautiful poems. Poetry is not always in rhyme, but generally it is.

As a rule, a prominent feature of beauty in the poem is the pleasant sensation produced by words coming near each other of similar sound.

In the stanza,

> "Maud Muller, on a summer's day,
> Raked the meadow, sweet with hay,"

it is seen that the pleasant jingling of "DAY" and "HAY" has much to do in making the verse attractive.

To express the same idea without rhyme thus:

> Maud Muller raked one day in summer,
> In a meadow where the hay was sweet,

is to deprive the sentiment of much of its charm.

Rhyme is, in fact, one of the prominent essentials of sweet verse, though to make the complete poem, common sense and truth must be expressed with rhyme.

It is sometimes the case that rhyme can be so ingeniously arranged, however, as to make a poem a success from the simple arrangement of rhyming words. Thus:

> "Hi diddle diddle, the cat and the fiddle,
> The cow jumped over the moon;
> The little dog laughed to see such a craft,
> And the dish ran away with the spoon."

Though nonsensical and ridiculous, this, with many others of the Mother Goose Melodies, is more attractive to the child than any of the choicest stanzas in Gray's Elegy.

A pleasant and intellectual pastime may be had by a company of young people, in the construction of impromptu rhymes. To conduct the exercise, one of the number is seated at the table, provided with paper and pencil. When all are in readiness, the hostess of the occasion announces a subject upon which they are to write a poem. Suppose the subject to be "SPRING." The person sitting next to the secretary will give the first line, the poetic feet decided upon, perhaps, being eight syllables to the line. The first line presented to the secretary may read,

> In spring-time when the grass is green.

It is now in order for the second person in the group to give the next line ending with a word that rhymes with "green." Half a minute only will be allowed for the line to be produced. The individual, whose turn it is, gathers thought and says:

> A thousand blossoms dot the scene.

This may not be very good poetry, but the rhyme is complete and the poetry is as good as may be expected with so short a time in which to produce it. The next continues by presenting the third line as follows:

A perfume sweet loads down the air.

The fourth says,

The birds now sing, and mate, and pair.

The fifth continues,

O! charming season of the year.

The sixth may be at a loss for the suitable word to rhyme with "year," but must produce something in the half-minute, and here it is:

I wish that you was always here

Whether the word "you" is a suitable word in this place, the rhymsters have not time to determine, as the composition must progress rapidly so that a twenty-line metrical composition may be produced in ten minutes.

As poetry this extemporaneous effusion, when finally read by the secretary, will not be very good—it may be only doggerel rhyme—but it will be amusing to see it produced, and its production will be a decidedly intellectual exercise.

For the advantage of the student who may aim to write the best of verse, as well as the impromptu poet in the social circle, who may wish to test the ability to rapidly make rhyme, the following vocabulary, from Walker's Rhyming Dictionary, is given:

Classification of Words that Rhyme.

AB.—Bab, cab, dab, mab, nab, blab, crab, drab, scab, stab. *Allowable rhymes*, babe, astrolabe, etc.

ACE.—Ace, dace, pace, face, lace, mace, race, brace, chace, grace, place, space, trace, apace, deface, efface, disgrace, displace, misplace, embrace, grimace, interlace, retrace, populace, etc. *Perfect rhymes*, base, case, abase, debase, etc. *Allowable rhymes*, grass, glass, etc., peace, cease, etc., dress, less, etc.

ACH.—Attach, detach, etc. *Perfect rhymes*, batch, match, etc. *Allowable rhymes*, fetch, wretch, etc.

ACK.—Back, cack, hack, jack, lack, pack, quack, tack, sack, rack, black, clack, crack, knack, slack, snack, stack, track, wrack, attack, zodiac, demoniac, symposiac, almanac. *Allowable rhymes*, bake, take, etc., neck, speck, etc.

ACT.—Act, fact, pact, tract, attract, abstract, extract, compact, contract, detract, distract, exact, protract, enact, infract, subtract, transact, cataract, *with the preterits and participles of verbs in* ack *as* backed, hacked, etc. *Allowable rhymes, the preterits and participles of verbs in* ake, *as* baked, caked, etc.

AD.—Add, bad, dad, gad, had, lad, mad, pad, sad, brad, clad, glad, plad, shad, etc. *Allowable rhymes*, cade, fade, etc., glede, bead, read, etc.

ADE.—Cade, fade, made, jade, lade, wade, blade, glade, shade, spade, trade, degrade, evade, dissuade, invade, persuade, blockade, brigade, esplanade, cavalcade, masquerade, renegade, retrograde, serenade, ambuscade, cannonade, palisade, etc. *Perfect rhymes*, aid, maid, braid, afraid, upbraid, etc., *and the preterits and participles of verbs in* ay, ey, and eigh, *as* played, obeyed, weighed, etc. *Allowable rhymes*, ad, bad, etc., bed, dead, etc., bead, mead, etc., heed, need, etc.

AFE.—Safe, chafe, vouchsafe, etc. *Allowable rhymes*, leaf, sheaf, etc., leaf, etc., laugh, staff, etc.

AFF.—Gaff, chaff, draff, quaff, staff, engraff, epitaph, cenotaph, paragraph, etc. *Perfect rhyme*, laugh. *Allowable rhymes*, safe, chafe, etc.

AFT.—Aft, haft, raft, waft, craft, shaft, abaft, graft, draft, ingraft, handicraft. *Perfect rhymes*, draught, *the preterits and participles of verbs in* aff *and* augh *as* quaffed, laughed, etc. *Allowable rhymes, the preterits and participles of verbs in* afe, *as* chafed, vouchsafed, etc.

AG.—Bag, cag, fag, gag, nag, rag, tag, wag, brag, crag, drag, flag, knag, shag, snag, stag, wrag, scrag, Brobdignag.

AGE.—Age, cage, gage, page, rage, sage, wage, stage, swage, assuage, engage, disengage, enrage, presage, appendage, concubinage, heritage, hermitage, parentage, parsonage, personage, pasturage, patronage, pilgrimage, villanage, equipage. *Allowable rhymes*, edge, wedge, etc., liege, siege, oblige, etc.

AID, *see* **ADE.** **AIGHT,** *see* **ATE.** **AIGN,** *see* **ANE.**

AIL.—Ail, bail, fail, hail, jail, mail, nail, pail, quail, rail, sail, tail, wail, flail, frail, snail, trail, assail, avail, detail, bewail, entail, prevail, retail, countervail, etc. *Perfect rhymes*, ale, bale, dale, gale, hale, male, pale, sale, tale, vale, wale, scale, stale, swale, whale, impale, exhale, regale, veil, nightingale, etc. *Allowable rhymes*, peal, steal, etc., bell, cell, etc.

AIM, *see* **AME.**

AIN.—Cain, blain, brain, chain, fain, gain, grain, lain, main, pain, rain, rain, wain, drain, plain, slain, Spain, stain, swain, train, twain, sprain, strain, abstain, amain, attain, complain, contain, constrain, detain, disdain, distrain, enchain, entertain, explain, maintain, ordain, pertain, obtain, refrain, regain, remain, restrain, retain, sustain, appertain. *Perfect rhymes*, bane, cane, dane, crane, fane, Jane, lane, mane, plane, vane, wane, profane, hurricane, etc., deign, arraign, campaign, etc., feign, reign, etc., vein, rein, etc. *Allowable rhymes*, lean, mean, etc., queen, seen, etc., ban, can, etc., den, pen, etc.

AINT.—Faint, paint, plaint, quaint, saint, taint, acquaint, attaint, complaint, constraint, restraint, etc. *Perfect rhyme*, feint. *Allowable rhymes*, cant, pant, etc., lent, rent, etc.

AIR, *see* **ARE.** **AISE**, *see* **AZE.** **AIT**, *see* **ATE.** **AITH**, *see* **ATH.** **AIZE**, *see* **AZE.**

AKE.—Ake, bake, cake, lake, make, quake, rake, sake, take, wake, brake, drake, flake, shake, snake, stake, strake, spake, awake, betake, forsake, mistake, partake, overtake, undertake, bespake. *Perfect rhymes*, break, steak, etc. *Allowable rhymes*, back, rack, etc., beck, deck, etc., speak, weak, etc.

AL.—Cabal, canal, animal, admiral, cannibal, capital, cardinal, comical, conjugal, corporal, criminal, critical, festival, funeral, general, hospital, interval, liberal, madrigal, literal, magical, mineral, mystical, musical, natural, original, pastoral, pedestal, personal, physical, poetical, political, principal, prodigal, prophetical, rational, satirical, reciprocal, rhetorical, several, temporal, tragical, tyrannical, carnival, schismatical, whimsical, arsenal. *Allowable rhymes*, all, ball, etc., ail, mail, etc., ale, pale, etc.

ALD.—Bald, scald, emerald, etc. *Perfect rhymes, the preterits and participles of verbs in* all, aul *and* awl, *as* called, mauled, crawled, etc.

ALE, *see* **AIL.**

ALF.—Calf, half, behalf, etc. *Allowable rhymes*, staff, laugh, etc.

ALK.—Balk, chalk, stalk, talk, walk, calk, etc. *Perfect rhyme*, hawk. *Allowable rhymes*, sock, clock, etc.

ALL.—All, ball, call, etc. *Perfect rhymes*, awl, bawl, brawl, crawl, scrawl, sprawl, squall. *Allowable rhymes*, cabal, equivocal, etc. *See* **AL.**

ALM.—Calm, balm, becalm, psalm, palm, embalm, etc., *and verbs whose plurals and third persons singular rhyme with* alms, *as* calms, becalms, etc.

ALT.—Halt, malt, exalt, salt, vault, assault, default *and* fault, *the last of which is, by Pope, rhymed with* thought, bought, etc.

ALVE.—Calve, halve, salve, valve.

AM.—Am, dam, ham, pam, ram, cram, dram, flam, sham, swam, epigram, anagram, etc. *Perfect rhyme*, lamb. *Allowable rhymes*, dame, lame, etc.

AME.—Blame, came, dame, same, flame, fame; frame, game, lame, name, tame, shame, inflame, became, defame, misname, misbecame, overcame, etc. *Perfect rhymes*, aim, claim, maim, acclaim, declaim, exclaim, proclaim, reclaim. *Allowable rhymes*, dam, ham, etc., hem, them, etc., theme, scheme, etc., dream, gleam, etc.

AMP.—Camp, champ, cramp, damp, stamp, vamp, lamp, clamp, decamp, encamp, etc.

AN.—Ban, can, Dan, man, Nan, pan, ran, tan, van, bran, plan, scan, span, than, unman, fore-ran, began, trepan, courtesan, partisan, artisan, pelican, caravan, etc. *Allowable rhymes*, bane, cane, plain, mane, etc., bean, lean, wan, swan, etc., gone, upon, etc.

ANCE.—Chance, dance, glance, lance, trance, prance, entrance, romance, advance, mischance, complaisance, circumstance, countenance, deliverance, consonance, dissonance, extravagance, ignorance, inheritance, maintenance, temperance, intemperance, exorbitance, ordinance, concordance, sufferance, sustenance, utterance, arrogance, vigilance, expanse, enhance.

ANCH.—Branch, stanch, blanch, ranch, hanch. *Perfect rhymes*, launch, paunch.

AND.—And, band, hand, land, rand, sand, brand, bland, grand, gland stand, strand, command, demand, countermand, disband, expand, withstand, understand, reprimand, contraband, etc. *Allowable rhymes*, wand fond, bond, etc., *and the preterits and participles of verbs in* ain *and* ean, *as* remained, leaned, etc.

ANE, *see* **AIN.**

ANG.—Bang, fang, gang, hang, pang, tang, twang, sang, rang, harangue, clang. *Allowable rhymes*, song, long, etc.

ANGE.—Change, grange, range, strange, estrange, arrange, exchange, interchange. *Allowable rhymes*, revenge, avenge, etc.

ANK.—Bank, blank, shank, clank, dank, drank, slank, frank, spank, stank, lank, plank, prank, rank, thank, disrank, mountebank, etc.

ANSE, *see* **ANCE.**

ANT.—Ant, cant, chant, grant, pant, plant, rant, slant, aslant, complaisant, displant, enchant, gallant, implant, recant, supplant, transplant, absonant, adamant, arrogant, combatant, consonant, cormorant, protestant, significant, visitant, covenant, dissonant, disputant, elegant, elephant, exorbitant, conversant, extravagant, ignorant, insignificant, inhabitant, militant, predominant, sycophant, vigilant, petulant, etc. *Allowable rhymes*, faint, paint, etc. *See* **AINT** *and* **ENT.**

AP.—Cap, gap, hap, lap, map, nap, pap, rap, sap, tap, chap, clap, trap, flap, knap, slap, snap, wrap, scrap, strap, enwrap, entrap, mishap, etc. *Allowable rhymes*, cape, tape, etc., cheap, heap *and* swap.

APE.—Ape, cape, chape, grape, rape, scrape, shape, escape, mape, crape, tape, etc. *Allowable rhymes*, heap, keep, etc.

APH, *see* **AFF.**

APSE.—Lapse, elapse, relapse, perhaps, *and the plurals of nouns and third persons singular of the present tense in* ap, *as* caps, maps, etc., he raps, he laps, etc. *Allowable rhymes, the plurals of nouns and third persons singular of verbs in* ape *and* eap, *as* apes, he apes, heaps, he heaps, etc.

APT.—Apt, adapt, etc. *Rhymes, the preterits and participles of the verbs in* ap, *as* tapped, slapped, etc. *Allowable rhymes, the preterits and participles of the verbs in* ape, *as* aped, escaped, etc.

AR.—Bar, car, far, jar, mar, par, tar, spar, scar, star, chair, afar, debar, unbar, catarrh, particular, perpendicular, secular, angular, regular, popular, singular, titular, vinegar, scimitar, calendar, collender. *Perfect rhyme, the plural verb* are. *Allowable rhymes*, bare, prepare, etc., pair, repair, wear, tear, war, etc. *and words ending in* er *or* or, *having the accent on the last syllable, or last but two.*

ARB.—Barb, garb, etc.

ARCE.—Farce, parse, Mars, etc. *Allowable rhyme*, scarce.

ARCH.—Arch, march, parch, starch, countermarch, etc.

ARD.—Bard, card, guard, hard, lard, nard, shard, yard, bombard, discard, regard, interlard, retard, disregard, etc., *and the preterits and participles of verbs in* ar, *as* barred, scarred, etc. *Allowable rhymes*, cord, reward, etc.

ARD.—Ward, award, reward, etc. *Allowable rhymes*, hard, card, *see the last article*, hoard, lord, bird, curd, *and the preterits and participles of the verbs in* ar, or, *and* ur, *as* barred, abhorred, incurred, etc.

ARE.—Bare, care, dare, fare, hare, mare, pare, tare, rare, ware, flare, glare, scare, share, snare, spare, square, stare, sware, prepare, aware, beware, compare, declare, ensnare. *Perfect rhymes*, air, hair, fair, lair, pair, chair, stair, affair, debonnair, despair, impair, repair, etc., bear, pear, swear, tear, wear, forbear, forswear, etc., there, were, where, ere, e'er, ne'er, elsewhere, whate'er, howe'er, howsoe'er, whene'er, where'er, etc., heir, co-heir, their. *Allowable rhymes*, bar, car, etc., err, prefer, *and* hear, here, etc., regular, singular, war, etc.

ARES.—Unawares. *Rhymes*, their's, *and the plurals of nouns and third persons singular of verbs in* are, air, eir, ear, *as* care, he cares, pair, he pairs, heirs, bear, he bears, etc. *The allowable rhymes are the plurals of nouns and the third persons singular of verbs which are allowed to rhyme with the termination* ars, *as* bars, cars, errs, prefers, etc.

ARF.—Scarf. *Allowable rhymes*, dwarf, wharf.

ARGE.—Barge, charge, large, targe, discharge, o'ercharge, surcharge, enlarge. *Allowable rhymes*, verge, emerge, gorge, forge, urge, etc.

ARK.—Bark, cark, Clark, dark, lark, mark, park, shark, spark, stark, embark, remark, etc. *Allowable rhymes*, cork, fork, etc.

ARL.—Snarl, marl, parl. *Allowable rhymes*, curl, furl, etc.

ARM.—Arm, barm, charm, farm, harm, alarm, disarm. *Allowable rhymes*, warm, swarm, storm, etc.

ARN.—Barn, yarn, etc. *Allowable rhymes*, warn, forewarn, etc., horn, morn, etc.

ARN.—Warn, forewarn. *Perfect rhymes*, horn, morn, etc. *Allowable rhymes*, barn, yarn, etc.

ARP.—Carp, harp, sharp, counterscarp. *Allowable rhyme*, warp.

ARSH.—Harsh, marsh, etc.

ART.—Art, cart, dart, hart, mart, part, smart, tart, start, apart, depart, impart, dispart, counterpart. *Perfect rhymes*, heart, etc. *Allowable rhymes*, wart, thwart, etc., hurt, etc., dirt, flirt, etc., pert, etc.

ART (*sounded* **ORT**).—Wart, thwart, etc. *Perfect rhymes*, short, retort, etc. *Allowable rhymes*, art, sport, court, etc.

ARTH, *see* **EARTH.**

ARVE.—Carve, starve, etc. *Allowable rhymes*, nerve, deserve, etc.

AS.—Was. *Allowable rhymes*, has, as.

ASS.—Ass, brass, class, grass, lass, mass, pass, alas, amass, cuirass, repass, surpass, morass, etc. *Allowable rhymes*, base, face, deface, etc., loss, toss, etc.

ASE, *see* **ACE.**

ASH.—Ash, cash, dash, clash, crash, flash, gash, gnash, hash, lash, plash, rash, thrash, slash, trash, abash, etc. *Allowable rhymes*, wash, quash, etc., leash, etc.

ASH.—Wash, quash, etc. *Allowable rhymes*, cash, dash, etc.

ASK.—Ask, task, bask, cask, flask, mask.

ASP.—Asp, clasp, gasp, grasp, hasp. *Allowable rhymes*, wasp, etc

AST.—Cast, last, blast, mast, past, vast, fast, aghast, avast, forecast, overcast, outcast, repast. *Perfect rhymes, the preterits and participles of verbs in* ass, *as* classed, amassed, etc. *Allowable rhymes, the preterits and participles of verbs in* ace, *as* placed, etc. *Nouns and verbs in* aste, *as* taste, waste, etc.

ASTE.—Baste, chaste, haste, paste, taste, waste, distaste. *Perfect rhymes*, waist, *and the preterits and participles of verbs in* ace, *as* faced, placed, etc. *Allowable rhymes*, cast, fast, etc., best, nest, etc., *and the preterits and participles of verbs in* ess, *as* messed, dressed, etc.

AT.—At, bat, cat, hat, fat, mat, pat, sat, rat, tat, vat, brat, chat, flat, plat, sprat, that, gnat. *Allowable rhymes*, bate, hate, etc.

ATCH.—Catch, match, hatch, latch, patch, scratch, smatch, snatch, despatch.

ATE.—Bate, date, fate, gate, grate, hate, tate, mate, pate, plate, prate, rate, sate, state, skate, slate, abate, belate, collate, create, debate, elate, dilate, estate, ingrate, innate, rebate, relate, sedate, translate, abdicate, abominate, abrogate, accelerate, accommodate, accumulate, accurate, adequate, affectionate, advocate, adulterate, aggravate, agitate, alienate, animate, annihilate, antedate, anticipate, antiquate, arbitrate, arrogate, articulate, assassinate, calculate, capitulate, captivate, celebrate, circulate, coagulate, commemorate, commiserate, communicate, compassionate, confederate, congratulate, congregate, consecrate, contaminate, corroborate, cultivate, candidate, co-operate, considerate, consulate, capacitate, debilitate, dedicate, degenerate, delegate, deliberate, denominate, depopulate, dislocate, deprecate, discriminate, derogate, dissipate, delicate, disconsolate, desperate, educate, effeminate, elevate, emulate, estimate, elaborate, equivocate, eradicate, evaporate, exaggerate, exasperate, expostulate, exterminate, extricate, facilitate, fortunate, generate, gratulate, hesitate, illiterate, illuminate, irritate, imitate, immoderate, impenetrate, importunate, imprecate, inanimate, innovate, instigate, intemperate, intimate, intimidate, intoxicate, intricate, invalidate, inveterate, inviolate, legitimate, magistrate, meditate, mitigate, moderate, necessitate, nominate, obstinate, participate, passionate, penetrate, perpetrate, personate, potentate, precipitate, predestinate, predominate, premeditate, prevaricate, procrastinate, profligate, prognosticate, propagate, recriminate, regenerate, regulate, reiterate, reprobate, reverberate, ruminate, separate, sophisticate, stipulate, subjugate, subordinate, suffocate, terminate, tolerate, temperate, vindicate, violate, unfortunate. *Perfect rhymes*, bait, plait, strait, wait, await, great. *Nearly perfect rhymes*, eight, weight, height, straight. *Allowable rhymes*, beat, heat, etc., bat, cat, etc., bet, wet, etc.

ATH.—Bath, path, etc. *Allowable rhymes*, hath, faith, etc.

ATHE.—Bathe, swathe, lathe, rathe.

AUB, *see* **OB.** **AUCE,** *see* **AUSE.** **AUCH,** *see* **OACH.**

AUD.—Fraud, laud, applaud, defraud. *Perfect rhymes*, broad, abroad, bawd, *and the preterits and participles of verbs in* aw, *as* gnawed, sawed, etc. . *Allowable rhymes*, odd, nod, etc., ode, bode, etc., *also the word* load.

AVE.—Cave, brave, gave, grave, crave, lave, nave, knave, pave, rave, save, shave, slave, stave, wave, behave, deprave, engrave, outbrave, forgave, misgave, architrave. *Allowable rhyme, the auxiliary verb* have.

AUGH, *see* **AFF.** **AUGHT,** *see* **OUGHT.** **AULT,** *see* **ALT.**

AUNCH.—Launch, paunch, haunch, staunch, etc.

AUNCE, *see* **ONSE.**

AUNT.—Aunt, daunt, gaunt, haunt, jaunt, taunt, vaunt, avaunt. *Perfect rhymes*, slant, aslant. *Allowable rhymes*, want, etc., pant, cant, etc.

AUSE.—Cause, pause, clause, applause, because. *Perfect rhymes, the plurals of nouns, and third persons singular of verbs in* aw, *as* laws, he draws, etc. *Allowable rhyme*, was.

AUST, *see* **OST.**

AW.—Craw, daw, law, chaw, claw, draw, flaw, gnaw, jaw, law, maw paw, raw, straw, thaw, withdraw, foresaw.

AWD, *see* **AUD.** **AWK,** *see* **ALK.**

AWL.—Bawl, brawl, drawl, crawl, scrawl, sprawl, squall. *Perfect rhymes*, ball, call, fall, gall, small, hall, pall, tall, wall, stall, install, forestall, thrall, inthrall.

AWN.—Dawn, brawn, fawn, pawn, spawn, drawn, yawn, lawn, withdrawn.

AX.—Ax, tax, wax, relax, flax. *Perfect rhymes, the plurals of nouns and third persons singular of verbs in* ack, *as* backs, sacks, etc., he lacks, he packs, etc. *Allowable rhymes, the plurals of nouns and third persons singular of verbs in* ake, *as* cakes, lakes, etc., he makes, he takes, etc.

AY.—Bray, clay, day, dray, tray, flay, fray, gay, hay, jay, lay, may, nay, pay, play, ray, say, way, pray, spray, slay, spay, stay, stray, sway, affray, allay, array, astray, away, belay, bewray, betray, decay, defray, delay, disarray, display, dismay, essay, forelay, gainsay, inlay, relay, repay, roundelay, virelay. *Perfect rhymes*, neigh, weigh, inveigh, etc., prey, they, convey, obey, purvey, survey, disobey, grey. *Allowable rhymes*, tea, sea, fee, see, glee, etc.

AZE.—Craze, daze, blaze, gaze, glaze, maze, raze, amaze, graze. *Perfect rhymes*, raise, praise, dispraise, etc., paraphrase, etc., *and the nouns plural, and third persons singular of the present tense of verbs in* ay, eigh, *and* ey, *as* days, he inveighs, he obeys, etc. *Allowable rhymes*, ease, tease, seize, etc., *and* keys, *the plural of* key, *also the auxiliaries* has *and* was.

E

E and EA, *see* **EE.** **EACE,** *see* **EASE.**

EACH.—Beach, breach, bleach, each, peach, preach, teach, impeach. *Nearly perfect rhymes*, beech, leech, speech, beseech. *Allowable rhymes*, fetch, wretch, etc.

EAD, *see* **EDE and EED.** **EAF,** *see* **IEF.**

EAGUE.—League, Teague, etc. *Perfect rhymes*, intrigue, fatigue, etc. *Allowable rhymes*, Hague, vague, etc., leg, beg, etc,, bag, rag, etc.

EAK, *see* **AKE.**—Beak, speak, bleak, creak, freak, leak, peak, sneak, squeak, streak, weak, tweak, wreak, bespeak. *Nearly perfect rhymes*, cheek, leek, creek, meek, reek, seek, sleek, pique, week, shriek. *Allowable rhymes*, beck, speck, etc., lake, take, thick, lick, etc.

EAL.—Deal, heal, reveal, meal, peal, seal, steal, teal, veal, weal, zeal, squeal, repeal, conceal, congeal, anneal, appeal. *Nearly perfect rhymes*, eel, heel, feel, keel, kneel, peel, reel, steel, wheel. *Allowable rhymes*, bell, tell, etc., bale, tale, etc., bill, fill, etc., ail, fail, etc.

EALM, *see* **ALM.**

EALTH.—Health, wealth, stealth, commonwealth, etc.

EAM.—Bream, cream, gleam, seam, scream, steam, stream, team, beam, dream. *Perfect rhymes*, fleame, scheme, theme, blaspheme, extreme, supreme. *Nearly perfect rhymes*, deem, teem, beseem, misdeem, esteem, disesteem, redeem, seem, etc. *Allowable rhymes*, dame, lame, etc., limb, him, etc , them, hem, etc., lamb, dam, etc. *See* **AME.**

EAN.—Bean, clean, dean, glean, lean, mean, wean, yean, demean, unclean. *Perfect rhymes*, convene, demesne, intervene, mien. *Nearly perfect rhymes*, machine, keen, screen, seen, green, spleen, between, careen, foreseen, serene, obscene, terrene, etc., queen, etc. *Allowable rhymes*, bane, mane, etc., ban, man, etc., bin, thin, begin etc.

EANS, *see* **ENSE.** **EANT,** *see* **ENT.** **EAP,** *see* **EEP and EP.** **EAR,** *see* **EER.**

EARD.—Heard, herd, sherd, etc. *Perfect rhymes, the preterits and participles of verbs in* er, *as* erred, preferred, etc. *Allowable rhymes*, beard, *the preterits and participles of verbs in* ere, ear, *and* ar, *as* revered, feared, barred.

EARCH.—Search, perch, research. *Allowable rhymes*, church, smirch, lurch, parch, march, etc.

EARN, *see* **ERN**. **EARSE**, *see* **ERSE**. **EART**, *see* **ART**.

EARTH.—Earth, dearth. *Perfect rhymes*, birth, mirth, etc. *Allowable rhymes*, hearth, etc.

EASE, *sounded* **EACE.**—Cease, lease, release, grease, decease, decrease, increase, surcease. *Perfect rhyme*, peace. *Nearly perfect rhymes*, piece, niece, fleece, geese, frontispiece, apiece, etc. *Allowable rhymes*, less, mess, etc., lace, mace, etc., miss, hiss, etc., nice, vice, etc.

EASH, *see* **ESH**.

EAST.—East, feast, least, beast. *Perfect rhymes, the preterits and participles of verbs in* ease, *as* cease, increased, etc. *Nearly perfect rhyme*, priest. *Allowable rhymes*, haste, taste, etc., best, chest, etc., fist, list, etc., *and the preterits and participles of verbs in* ess *and* iss, *as* dressed, hissed.

EAT.—Bleat, eat, feat, heat, meat, neat, seat, treat, wheat, beat, cheat, defeat, estreat, escheat, entreat, retreat. *Perfect rhymes*, obsolete, replete, concrete, complete. *Nearly perfect rhymes*, feet, fleet, gleet, greet, meet, sheet, sleet, street, sweet, discreet. *Allowable rhymes*, bate, grate, hate, etc., get, met, etc., bit, hit, etc. *See* **ATE**.

EATH.—Breath, death, etc. *Allowable rhymes*, heath, sheath, teeth.

EATHE.—Breathe, sheathe, etc. *Perfect rhymes*, wreath, inwreath, bequeath, beneath, underneath, etc. *Nearly perfect rhymes*, seethe, etc.

EAVE.—Cleave, heave, interweave, leave, weave, bereave, inweave. *Perfect rhymes*, receive, conceive, deceive, perceive. *Nearly perfect rhymes*, eve, grieve, thieve, aggrieve, achieve, believe, disbelieve, relieve, reprieve, retrieve. *Allowable rhymes*, live, give, etc., lave, cave, etc., *and* have.

EBB.—Ebb, web, etc. *Allowable rhymes*, babe, astrolabe, etc., glebe, etc.

ECK.—Beck, check, deck, neck, speck, wreck. *Allowable rhymes*, break, take, etc., beak, sneak, etc.

ECT.—Sect, abject, affect, correct, incorrect, collect, deject, detect, direct, disrespect, disaffect, dissect, effect, elect, eject, erect, expect, indirect, infect, inspect, neglect, object, project, protect, recollect, reflect, reject, respect, select, subject, suspect, architect, circumspect, dialect, intellect. *Perfect rhymes, the preterits and participles of verbs in* eck, *as* decked, checked, etc. *Allowable rhymes, the preterits and participles of verbs in* ake *and* eak, *as* baked, leaked.

ED.—Bed, bled, fed, fled, bred, led, shred, shed, sped, wed, abed, inbred, misled. *Perfect rhymes*, said, bread, dread, dead, head, lead, read, spread, thread, tread, behead, o'erspread. *Allowable rhymes*, bead, mead, etc., blade, fade, etc., maid, paid, etc., *and the preterits and participles of verbs in* ay, ey, *and* eigh, *as* bayed, obeyed, weighed, etc.

EDE, *see* **EED**.

EDGE.—Edge, wedge, fledge, hedge, ledge, pledge, sedge, allege. *Allowable rhymes*, age, page, etc., siege, oblige, etc., privilege, sacrilege, sortilege.

EE.—Bee, free, glee, knee, see, three, thee, tree, agree, decree, degree, disagree, foresee, o'ersee, pedigree, he, me, we, she, be, jubilee, Lee. *Nearly perfect rhymes*, sea, plea, flea, tea, key. *Allowable rhymes, all words of one syllable ending in* y, ye, *or* ie, *or polysyllables of these terminations having the accent on the ultimate or antepenultimate syllable.*

EECE, *see* **EASE**. **EECH**, *see* **EACH**.

EED.—Creed, deed, indeed, bleed, breed, feed, need, meed, heed, reed, speed, seed, steed, weed, proceed, succeed, exceed. *Perfect rhymes*, knead, read, intercede, precede, recede, concede, impede, supersede, etc., bead, lead, mead, plead, etc. *Allowable rhymes*, bed, dead, etc., bid, hid, etc., made, blade, etc.

EEF, *see* **IEF**. **EEK**, *see* **EAK**. **EEL**, *see* **EAL**. **EEM**, *see* **EAM**. **EEN**, *see* **EAN**.

EEP.—Creep, deep, sleep, keep, peep, sheep, steep, sweep, weep, asleep. *Nearly perfect rhymes*, cheap, heap, reap, etc. *Allowable rhymes*, ape, rape, etc., step, nep, etc., hip, lip, etc.

EER.—Beer, deer, fleer, geer, jeer, peer, meer, leer, sheer, steer, sneer, cheer, veer, pickeer, domineer, cannoneer, compeer, engineer, mutineer, pioneer, privateer, charioteer, chanticleer, career, mountaineer. *Perfect rhymes*, here, sphere, adhere, cohere, interfere, persevere, revere, austere, severe, sincere, hemisphere, etc., ear, clear, dear, fear, hear, near, sear, smear, spear, tear, year, appear, besmear, disappear, endear, auctioneer. *Allowable rhymes*, hare, dare, etc., preter, deter, character, etc.

EESE, *see* **EEZE**. **EET**, *see* **EAT**. **EETH**, *see* **EATH**. **EEVE**, *see* **EAVE**.

EEZE.—Breeze, freeze, wheeze, sneeze, squeeze, *and the plurals of nouns and third persons singular, present tense, of verbs in* ee, *as* bees, he sees. *Perfect rhymes*, cheese, these, etc. *Nearly perfect rhymes*, ease, appease, disease, displease, tease, seize, etc., *and the plurals of nouns as in* ea, *as* teas, pleas, etc., *and the polysyllables ending in* es, *having the accent on the antepenultimate, as* images, monarchies, etc.

EFT.—Cleft, left, theft, weft, bereft, etc. *Allowable rhymes*, lift, sift, etc., *and the third person singular, present tense, of verbs in* afe, aff, augh, *and* iff, *as* chafed, quaffed, laughed, whiffed, etc.

EG.—Egg, leg, beg, peg. *Allowable rhymes*, vague, plague, etc., league, Teague, etc.

EIGH, *see* **AY**. **EIGHT**, *see* **ATE**. **EIGN**, *see* **AIN**. **EIL**, *see* **AIL**. **EIN**, *see* **AIN**. **EINT**, *see* **AINT**. **EIR** *see* **ARE**. **EIT**, *see* **EAT**. **EIVE**, *see* **EAVE**. **EIZE**, *see* **EEZE**.

ELL.—Ell, dwell, fell, hell, knell, quell, sell, bell, cell, dispel, foretell, excel, compel, befell, yell, well, tell, swell, spell, smell, shell, parallel, sentinel, infidel, citadel, refel, repel, rebel, impel, expel. *Allowable rhymes*, bale, sail, etc., heal, peal, etc., eel, steel, etc.

ELD.—Held, geld, withheld, upheld, beheld, etc. *Perfect rhymes, the preterits and participles of verbs in* ell, *as* swelled, felled, etc. *Allowable rhymes, the preterits and participles of verbs in* ale, all, etc., heal, seal, etc., *as* impaled, waled, etc., healed, sealed, etc.

ELF.—Elf, pelf, self, shelf, himself, etc.

ELK.—Elk, whelk, etc.

ELM.—Elm, helm, realm, whelm, overwhelm, etc. *Allowable rhymes*, palm, film, etc.

ELP.—Help, whelp, yelp, etc.

ELT.—Belt, gelt, melt, felt, welt, smelt, pelt, dwelt. *Perfect rhyme*, dealt.

ELVE.—Delve, helve, twelve, etc.

ELVES.—Elves, themselves, etc. *Perfect rhymes, the plurals of nouns and third persons singular of verbs in* elf *and* elve, *as* twelves, delves, shelves, etc.

EM.—Gem, hem, stem, them, diadem, stratagem, etc. *Perfect rhymes*, condemn, contemn, etc. *Allowable rhymes*, lame, tame, etc., team, seam, theme, etc.

EME, *see* **EAM**.

EMN.—Condemn, contemn, etc. *Perfect rhymes*, gem, hem, etc. *Allowable rhymes*, lame, tame, etc., team, seam, etc.

EMPT.—Tempt, exempt, attempt, contempt.

EN.—Den, hen, fen, ken, men, pen, ten, then, when, wren, denizen. *Allowable rhymes*, bane, fane, etc., mean, bean, etc.

ENCE.—Fence, hence, dense, pence, thence, whence, defense, expense, offense, pretense, commence, abstinence, circumference, conference, confidence, consequence, continence, benevolence, concupiscence, difference, diffidence, diligence, eloquence, eminence, evidence, excellence, impenitence, impertinence, impotence, impudence, improvidence, incontinence, indifference, indigence, indolence, inference, intelligence, innocence, magnificence, munificence, negligence, omnipotence, penitence, preference, providence, recompense, reference, residence, reverence, vehemence, violence. *Perfect rhymes*, sense, dense, cense, condense, immense, intense, propense, dispense, suspense, prepense, incense, frankincense.

ENCH.—Bench, drench, retrench, quench, clench, stench, fench, trench, wench, wrench, intrench.

END.—Bend, mend, blend, end, fend, lend, rend, send, spend, tend, vend, amend, attend, ascend, commend, contend, defend, depend, descend, distend, expend, extend, forefend, impend, misspend, obtend, offend, portend, pretend, protend, suspend, transcend, unbend, apprehend, comprehend, condescend, discommend, recommend, reprehend, dividend, reverend. *Perfect rhymes*, friend, befriend, *and the preterits and participles of verbs in* en, *as* penned, kenned, etc. *Allowable rhymes, the preterits and participles of verbs in* ean, *as* gleaned, yeaned, etc.

ENDS.—Amends. *Perfect rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* end, *as* friends, he mends, etc.

ENE, *see* **EAN**.

ENGE.—Avenge, revenge, etc

ENGTH.—Length, strength, etc.

ENSE (*sounded* **ENZE**).—Cleanse. *Perfect rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* en, *as* hens, fens, he pens, he kens, etc.

ENT.—Bent, lent, rent, pent, scent, sent, shent, spent, tent, vent, went, absent, meant, ascent, assent, attent, augment, cement, content, consent, descent, dissent, event, extent, foment, frequent, indent, intent, invent, lament, misspent, o'erspent, present, prevent, relent, repent, resent, ostent, ferment, outwent, underwent, discontent, unbent, circumvent, represent, abstinent, accident, accomplishment, admonishment, acknowledgment, aliment, arbitrament, argument, banishment, battlement, blandishment, astonishment, armipotent, bellipotent, benevolent, chastisement, competent, compliment, complement, confident, continent, corpulent, detriment, different, diffident, diligent, disparagement, document, element, eloquent, eminent, equivalent, establishment, evident, excellent, excrement, exigent, experiment, firmament, fraudulent, government, embellishment, imminent, impenitent, impertinent, implement, impotent, imprisonment, improvident, impudent, incident, incompetent, incontinent, indifferent, indigent, innocent, insolent, instrument, irreverent, languishment, ligament, lineament, magnificent, management, medicament, malcontent, monument, negligent, nourishment, nutriment, occident, omnipotent, opulent, ornament, parliament, penitent, permanent, pertinent, president, precedent, prevalent, provident, punishment, ravishment, regiment, resident, redolent, rudiment, sacrament, sediment, sentiment, settlement, subsequent, supplement, intelligent, tenement, temperament, testament, tournament, turbulent, vehement, violent, virulent, reverent. *Allowable rhymes*, paint, saint, etc.

ENTS.—Accoutrements. *Perfect rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* ent, *as* scents, he assents, etc.

EP.—Step, nep, etc. *Allowable rhymes*, leap, reap, etc., rape, tape, etc.

EPT.—Accept, adept, except, intercept, etc. *Perfect rhymes*, crept, slept, wept, kept. *Allowable rhymes, the preterits and participles of verbs in* ape, eep *and* eap, *as* peeped, reaped, shaped, etc.

ERR.—Err, aver, defer, infer, deter, inter, refer, transfer, confer, prefer, parterre, administer, wagoner, islander, arbiter, character, villager, cottager, dowager, forager, pillager, voyager, massacre, gardener, slanderer, flatterer, idolater, provender, theater, amphitheater, foreigner, lavender, messenger, passenger, sorcerer, interpreter, officer, mariner, harbinger, minister, register, canister, chorister, sophister, presbyter, lawgiver, philosopher, astrologer, loiterer, prisoner, grasshopper, astronomer, sepulcher, thunderer, traveler, murderer, usurer. *Allowable rhymes*, bare, care, etc., ear, fear, etc., bar, car, etc., sir, fir, her, etc.

ERCH, *see* **EARCH**. **ERCE**, *see* **ERSE**. **ERD**, *see* **EARD**. **ERE**, *see* **EER**.

ERGE.—Verge, emerge, absterge, immerge. *Perfect rhyme*, dirge. *Nearly perfect rhymes*, urge, purge, surge. *Allowable rhymes*, barge, large, etc.

ERN.—Fern, stern, discern, concern. *Perfect rhymes*, learn, earn, yearn, etc. *Allowable rhymes*, barn, yarn, etc., burn, turn, etc.

ERSE.—Verse, hearse, absterse, adverse, averse, converse, disperse, immerse, perverse, reverse, traverse, asperse, intersperse, universe. *Perfect rhymes*, amerce, coerce, etc., fierce, tierce, pierce, etc. *Allowable rhymes*, farce, parse, Mars, etc., purse, curse, etc.

ERT.—Wert, advert, assert, avert, concert, convert, controvert, desert, divert, exert, expert, insert, invert, pervert, subvert. *Allowable rhymes*, heart, part, etc., shirt, dirt, etc., hurt, spurt, etc.

ERVE.—Serve, nerve, swerve, preserve, deserve, conserve, observe, reserve, disserve, subserve. *Allowable rhymes*, starve, carve, etc., curve, etc.

ESS.—Bless, dress, cess, chess, guess, less, mess, press, stress, acquiesce, access, address, assess, compress, confess, [illegible], depress, digress, dispossess, distress, excess, express, impress, oppress, possess, profess, recess, repress, redress, success, transgress, adulteress, bashfulness, bitterness, cheerfulness, comfortless, comeliness, dizziness, diocese, drowsiness, eagerness, easiness, embassadress, emptiness, evenness, fatherless, filthiness, foolishness, forgetfulness, forwardness, frowardness, fruitfulness, fulsomeness, giddiness, greediness, gentleness, governess, happiness, haughtiness, heaviness, idleness, heinousness, hoaryness, hollowness, holiness, lasciviousness, lawfulness, laziness, littleness, liveliness, loftiness, lioness, lowliness, manliness, masterless, mightiness, motherless, motionless, nakedness, neediness, noisomeness, numberless, patroness, peevishness, perfidiousness, pitiless, poetess, prophetess, ransomness, readiness, righteousness, shepherdess, sorceress, sordidness, spiritless, sprightliness, stubbornness, sturdiness, surliness, steadiness, tenderness, thoughtfulness, ugliness, uneasiness, unhappiness, votaress, usefulness, wakefulness, wantonness, weaponless, wariness, willingness, willfulness, weariness, wickedness, wilderness, wretchedness, drunkenness, childishness. *Allowable rhymes*, mass, pass, etc., mace, place, etc.

ESE, *see* **EEZE.**

ESH.—Flesh, fresh, refresh, thresh, afresh, mesh. *Allowable rhymes*, mash, flash, etc.

ESK.—Desk. *Perfect rhymes*, grotesque, burlesque, etc. *Allowable rhymes*, mask, ask, etc.

EST.—Best, chest, crest, guest, jest, nest, pest, quest, rest, test, vest, west, arrest, attest, bequest, contest, detest, digest, divest, invest, infest, molest, obtest, protest, retest, suggest, unrest, interest, manifest, etc. *Perfect rhymes*, breast, abreast, etc., *and the preterits and participles of verbs in* ess, *as* dressed, expressed, etc. *Allowable rhymes*, cast, fast, etc., haste, waste, etc., beast, least, etc. *See* **EAST.**

ET.—Bet, jet, fret, get, let, met, net, set, wet, whet, yet, debt, abet, beget, beset, forget, regret, alphabet, amulet, anchoret, cabinet, epithet, parapet, rivulet, violet, counterfeit, coronet, etc. *Perfect rhymes*, sweat, threat, etc. *Allowable rhymes*, bate, hate, etc., beat, heat, etc.

ETCH.—Fetch, stretch, wretch, sketch, etc. *Allowable rhymes*, match, latch, etc., peach, bleach, etc.

ETE, *see* **EAT.** **EVE**, *see* **EAVE.** **EUM**, *see* **UME.**

EW.—Blew, chew, dew, brew, drew, flew, few, grew, new, knew, hew, Jew, mew, view, threw, yew, crew, slew, anew, askew, bedew, eschew, renew, review, withdrew, screw, interview, etc. *Perfect rhymes*, blue, clue, cue, glue, hue, rue, sue, strue, accrue, ensue, endue, imbue, imbrue, pursue, subdue, adieu, purlieu, perdue, residue, avenue, revenue, retinue.

EWD, *see* **EUD.** **EWN**, *see* **UNE.**

EX.—Sex, vex, annex, convex, complex, perplex, circumflex, *and the plurals of nouns and third persons singular of verbs in* eck, *as* checks, he checks, etc. *Allowable rhymes*, ax, wax, etc., *and the plurals of nouns and third persons singular of verbs in* ake, ack, eak, eke, ique, ike, etc., breaks, rakes, etc., he takes, he breaks, racks, he ekes, pikes, he likes, he pipes, etc.

EXT.—Next, pretext, *and the preterits and participles of verbs in* ex, *as* vexed, perplexed, etc. *Allowable rhymes, the preterits and participles of verbs in* ax, *as* waxed, etc.

EY, *see* **AY**

I

IB.—Bib, crib, squib, drib, glib, nib, rib. *Allowable rhymes*, bribe, tribe, etc.

IBE.—Bribe, tribe, scribe, ascribe, describe, superscribe, prescribe, proscribe, subscribe, transcribe, inscribe. *Allowable rhymes*, bib, crib, etc.

ICE.—Ice, dice, mice, nice, price, rice, spice, slice, thrice, trice, advice, entice, vice, device. *Perfect rhymes*, rise, concise, precise, paradise, etc. *Allowable rhymes*, miss, kiss, hiss, artifice, avarice, cockatrice, benefice, cicatrice, edifice, orifice, prejudice, precipice, sacrifice, etc., piece, fleece, etc.

ICH, *see* **ITCH.**

ICK.—Brick, sick, chick, kick, lick, nick, pick, quick, stick, thick, trick, arithmetic, asthmatic, choleric, catholic, phlegmatic, heretic, rhetoric, schismatic, splenetic, lunatic, politic, empiric. *Allowable rhymes*, like, pike, etc., weak, speak, etc.

ICT.—Strict, addict, afflict, convict, inflict, contradict, etc. *Perfect rhymes, the preterits and participles of verbs in* ick, *as* licked, kicked, etc. *Allowable rhymes, the preterits and participles of verbs in* ike, eak, *as* liked, leaked, etc.

ID.—Bid, chid, hid, kid, lid, slid, rid, bestrid, pyramid, forbid. *Allowable rhymes*, bide, chide, parricide, etc., *and the preterits and participles of verbs in* y, *or* ie, *as* died, replied, etc., lead, bead, mead, deed, need, etc., *and the preterits and participles of verbs in* ee, *as* freed, agreed, etc.

IDE.—Bide, chide, hide, glide, pride, ride, slide, side, stride, tide, wide, bride, abide, guide, aside, astride, beside, bestride, betide, confide, decide, deride, divide, preside, provide, subside, misguide, subdivide, etc. *Perfect rhymes, the preterits and participles of verbs in* ie *and* y, *as* dyed, replied, etc., *and the participle* sighed. *Allowable rhymes*, bead, mead, etc., bid, hid, etc.

IDES.—Ides, besides. *Perfect rhymes, the plurals of nouns and third persons singular of verbs in* ide, *as* tide, he rides, etc. *Allowable rhymes, the plurals of nouns and third persons singular of verbs in* ead, id, *as* beads, he leads, etc., kids, he bids, etc.

IDGE.—Bridge, ridge, abridge, etc.

IDST.—Midst, amidst, etc. *Perfect rhymes, the second person singular, of the present tense of verbs in* id, *as* thou biddest, thou hiddest, etc. *Allowable rhymes, the second persons singular of the present tense of verbs in* ide, *as* thou hidest, thou readest, etc.

IE, or Y.—By, buy, cry, die, dry, eye, fly, fry, fie, hie, lie, pie, ply, pry, rye, shy, sly, spry, sky, sty, tie, try, vie, why, ally, apply, awry, belie, comply, decry, defy, descry, deny, imply, espy, outvie, outfly, rely, reply, supply, untie, amplify, beautify, certify, crucify, deify, dignify, edify, falsify, fortify, gratify, glorify, indemnify, justify, magnify, modify, mollify, mortify, pacify, petrify, purify, putrefy, qualify, ratify, rectify, sanctify, satisfy, scarify, signify, specify, stupefy, terrify, testify, verify, vilify, vitrify, vivify, prophesy. *Perfect rhymes*, high, nigh, sigh, thigh. *Allowable rhymes*, bee, she, tea, sea, etc. [illegible] conspiracy, confederacy, [illegible] supremacy, lunacy, privacy, [illegible] sovereignty, loyalty, disloyalty, [illegible] infamy, constancy, fealty, cavalry, bigamy, polygamy, vacancy, inconstancy, infancy, company, accompany, dittany, tyranny, villainy, anarchy, monarchy, lethargy, incendiary, infirmary, library, salary, sanctuary, votary, auxiliary, contrary, diary, granary, rosemary, urgency, infantry, knavery, livery, recovery, robbery, novelty, antipathy, apathy, sympathy, idolatry, galaxy, husbandry, cruelty, enemy, blasphemy, prophecy, clemency, decency, inclemency, emergency, regency, progeny, energy, poverty, liberty, property, adultery, artery, artillery, battery, beggary, bribery, bravery, delivery, drudgery, flattery, gallery, imagery, lottery, misery, mystery, nursery, raillery, slavery, sorcery, treachery, discovery, tapestry, majesty, modesty, immodesty, honesty, dishonesty, courtesy, heresy, poesy, poetry, secrecy, leprosy, perfidy, subsidy, drapery, symmetry, drollery, prodigy, policy, mutiny, destiny, scrutiny, hypocrisy, family, ability, activity, avidity, assiduity, civility, community, concavity, consanguinity, conformity, congruity, diuturnity, facility, falsity, familiarity, formality, generosity, gratuity, humidity, absurdity, adversity, affability, affinity, agility, alacrity, ambiguity, animosity, antiquity, austerity, authority, brevity, calamity, capacity, captivity, charity, chastity, civility, credulity, curiosity, finery, declivity, deformity, duty, dexterity, dignity, disparity, diversity, divinity, enmity, enormity, equality, equanimity, equity, eternity, extremity, fatality, felicity, fertility, fidelity, frugality, futurity, gravity, hostility, humanity, humility, immanity, immaturity, immensity, immorality, immortality, immunity, immutability, impartiality, impossibility, impetuosity, improbity, inanity, incapacity, incivility, incongruity, inequality, indemnity, infinity, inflexibility, instability, invalidity, jollity, lenity, lubricity, magnanimity, majority, mediocrity, minority, mutability, nicety, perversity, perplexity, perspicuity, prosperity, privity, probability, probity, propensity, rarity, rapidity, sagacity, sanctity, sensibility, sensuality, solidity, temerity, timidity, tranquillity, virginity, visibility, university, trumpery, apology, genealogy, etymology, simony, symphony, soliloquy, allegory, armory, factory, pillory, faculty, treasury, usury, augury, importunity, impunity, impurity, inaccuracy, inability, incredulity, indignity, infidelity, infirmity, iniquity, integrity, laity, liberality, malignity, maturity, morality, mortality, nativity, necessity, neutrality, nobility, obscurity, opportunity, partiality, perpetuity, prosperity, priority, prodigality, purity, quality, quantity, scarcity, security, severity, simplicity, sincerity, solemnity, sterility, stupidity, trinity, vacuity, validity, vanity, vivacity, unanimity, uniformity, unity, anxiety, gaiety, impiety, piety, satiety, sobriety, society, variety, customary, melody, philosophy, astronomy, anatomy, colony, gluttony, harmony, agony, gallantry, canopy, history, memory, victory, calumny, injury, luxury, penury, perjury, usury, industry.

IECE, *see* **EASE.**

IEF.—Grief, chief, fief, thief, brief, belief, relief, etc. *Perfect rhymes*, reef, beef, etc. *Nearly perfect rhymes*, leaf, sheaf, etc.

IEGE.—Liege, siege, oblige, disoblige, assiege, besiege

IELD.—Field, yield, shield, wield, afield. *Nearly perfect rhymes, the preterits and participles of verbs in* eal, *as* healed, repealed, etc.

IEN, *see* **EEN.** **IEND**, *see* **END.** **IERCE**, *see* **ERSE.** **IEST**. *see* **EAST.** **IEVE**, *see* **EAVE.**

IFE.—Rife, fife, knife, wife, strife, life. *Allowable rhymes*, cliff, skiff, stiff, whiff, etc.

IFF, *see* **IFE.**

IFT.—Gift, drift, shift, lift, rift, sift, thrift, adrift, etc., *and the preterits and participles of verbs in* iff, *as* whiffed, etc.

IG.—Big, dig, gig, fig, pig, rig, sprig, twig, swig. *Allowable rhymes*, league, Teague, fatigue, etc.

IGE, *see* **IEGE.** **IGH**, *see* **IE.** **IGHT**, *see* **ITE.** **IGN**, *see* **INE**, **IGUE**, *see* **EAGUE.**

IKE.—Dike, like, pike, spike, strike, alike, dislike, oblique. *Allowable rhymes*, leak, speak, antique, etc., lick, pick, etc.

ILL.—Bill, chill, fill, drill, gill, hill, ill, kill, mill, quill, rill, shrill, skill, spill, still, swill, thrill, till, trill, will, distill, fulfill, instill, codicil, daffodil, utensil. *Perfect rhymes, all words ending in* ile, *with the accent on the antepenultimate syllable, as* volatile, etc. *Allowable rhymes*, byle, chyle, file, feel, reel, etc., meal, peal, seal, etc., *and words in* ble, *having the accent on the antepenultimate, as* suitable, etc.

ILD.—Child, mild, wild, etc. *Perfect rhymes, the preterits and participles of verbs of one syllable in* ile, *or of more syllables, provided the accent be on the last, as* piled, reviled, etc. *Allowable rhymes, the preterits and participles of verbs in* ill, *as* filled, willed, etc., *in* oil, *as* oiled, boiled, foiled, etc.

ILD. Gild, build, rebuild, etc. *Perfect rhymes, the preterits and participles of verbs in* illed, *as* filled, willed, etc. *Allowable rhymes*, child, mild, *and their allowable rhymes, which see.*

ILE.—Bile, chyle, file, guile, isle, mile, pile, smile, stile, style, tile, vile, while, awhile, compile, revile, defile, exile, erewhile, reconcile, beguile. *Allowable rhymes*, oil, boil, etc., bill, fill, etc.

ILK.—Milk, silk, bilk, etc.

ILT.—Gilt, jilt, built, quilt, guilt, hilt, spilt, stilt, tilt.

ILTH.—Filth, tilth, etc.

IM.—Brim, dim, grim, him, rim, skim, slim, trim, whim, prim. *Perfect rhymes*, limb, hymn, limn. *Allowable rhymes*, lime, time, climb, etc., team, gleam, etc.

IMB, *see* **IM.**

IME.—Chime, time, grime, climb, clime, crime, prime, mime, rhyme, slime, thyme, lime, sublime. *Allowable rhymes*, brim, dim, maritime, etc.

IMES.—Betimes, sometimes, etc. *Perfect rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* ime, *as* chimes, he rhymes, etc. *Allowable rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* eam *and* im, *as* dreams, brims, he swims, etc

IMN, *see* **IM.**

IMP.—Imp, pimp, limp, gimp.

IMPSE.—Glimpse. *Rhymes, the plurals of nouns, third person present, of verbs in* imp, *as* imps, he limps, etc.

IN.—Chin, din, fin, gin, grin, in, inn, kin, pin, shin, sin, spin, skin, thin, tin, win, within, assassin, javelin, begin. *Allowable rhymes*, chine, dine, etc., lean, bean, etc., machine, magazine, etc.

INCE.—Mince, prince, since, quince, rinse, wince, convince, evince.

INCH.—Clinch, flinch, winch, pinch, inch.

INCT.—Instinct, distinct, extinct, precinct, succinct, etc., *and the preterits and participles of verbs in* ink, *as* linked, pinked, etc.

IND.—Bind, find, mind, blind, hind, kind, grind, rind, wind, behind, unkind, remind, etc., *and the preterits and participles of verbs in* ine, *as* refined. *Allowable rhymes*, rescind, prescind, *and the noun* wind, *as it is frequently pronounced, also the participles of verbs in* oin, *as* joined.

INE.—Dine, brine, mine, chine, fine, line, nine, pine, shine, shrine, kine, thine, trine, twine, vine, wine, whine, combine, confine, decline, define, incline, enshrine, intwine, opine, calcine, recline, refine, repine, superfine, interline countermine, undermine, supine, concubine, porcupine, divine. *Perfect rhymes*, sign, assign, consign, design, etc. *Allowable rhymes*, bin, thin, tin, origin, join, loin, etc., *polysyllables ending in* ine, *pronounced* in, *as* masculine, feminine, discipline, libertine, heroine, etc.

ING.—Bring, sing, fling, cling, ring, sling, spring, sting, swing, wing, wring, thing, etc., *and the participles of the present tense in* ing, *with the accent on the antepenultimate, as* recovering, altering, etc.

INGE.—Cringe, fringe, hinge, singe, springe, swinge, tinge, twinge, infringe

INK.—Ink, think, wink, drink, blink, brink, chink, clink, link, pink, shrink, sink, slink, stink, bethink, forethink.

INT.—Dint, mint, hint, flint, lint, print, squint, asquint, imprint.

IP.—Chip, lip, hip, clip, dip, drip, nip, sip, rip, scrip, ship, skip, slip, snip, strip, tip, trip, whip, equip, eldership, fellowship, workmanship, rivalship, *and all words in* ship, *with the accent on the antepenultimate. Allowable rhymes*, wipe, gripe, etc., leap, heap, etc.

IPE.—Gripe, pipe, ripe, snipe, type, stripe, wipe, archetype, prototype. *Allowable rhymes*, chip, lip, workmanship, etc.

IPSE.—Eclipse. *Rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* ip, *as* grips, strips, etc. *Allowable rhymes, the plurals of nouns and third persons singular, present tense, of verbs in* ipe, *as* gripes, wipes, etc.

IR, *see* **UR. IRCH**, *see* **URCH. IRD**, *see* **URD.**

IRE.—Fire, dire, hire, ire, lyre, mire, quire, sire, spire, squire, wire, tire, attire, acquire, admire, aspire, conspire, desire, inquire, entire, expire, inspire, require, retire, transpire, Tyre. *Perfect rhymes*, friar, liar, brier, *and nouns formed from verbs ending in* ie *or* y, *as* crier, dyer, *as also the comparative of adjectives of the same sounding terminations, as* nigher, shyer, etc.

IRGE, *see* **ERGE.**

IRL.—Girl, whirl, twirl. *Nearly perfect rhymes*, curl, furl, churl, etc.

IRM.—Firm, affirm, confirm, infirm. *Nearly perfect rhymes*, worm, term, etc.

IRST. *see* **URST. IRT**, *see* **URT.**

IRTH.—Birth, mirth. *Perfect rhymes*, earth, dearth, *which see.*

ISS.—Bliss, miss, hiss, kiss, this, abyss, amiss, submiss, dismiss, remiss. *Allowable rhymes*, mice, spice, etc., peace, lease, etc.

IS, *pronounced like* **IZ.**—Is, his, whiz.

ISE, *see* **ICE** *and* **IZE.**

ISH.—Dish, wish, fish, cuish, pish.

ISK.—Brisk, frisk, disk, risk, whisk, basilisk, tamarisk.

ISP.—Crisp, wisp, lisp.

IST.—Fist, list, mist, twist, wrist, assist, consist, desist, exist, insist, persist, resist, subsist, alchemist, amethyst, anatomist, antagonist, annalist, evangelist, eucharist, exorcist, herbalist, humorist, oculist, organist, satirist, etc., *and the preterits and participles of verbs in* iss, *as* missed, hissed, etc. *Allowable rhymes, the preterits and participles of verbs in* ice, *as* spiced, sliced, etc.

IT.—Bit, cit, hit, fit, grit, flit, knit, nit, pit, quit, sit, split, twit, wit, whit, writ, admit, acquit, commit, emit, omit, outwit, permit, remit, submit, transmit, refit, benefit, perquisite. *Allowable rhymes*, beat, heat, etc., bite, mite, light, etc.

ITCH and HITCH.—Ditch, pitch, rich, which, Fitch, bitch, flitch, hitch, itch, stitch, switch, twitch, witch, bewitch, niche, enrich.

ITE and IGHT.—Bite, cite, kite, mite, quite, rite, smite, spite, trite, white, write, contrite, disunite, despite, indite, invite, excite, incite, polite, requite, recite, unite, reunite, aconite, appetite, parasite, proselyte, expedite, *Perfect rhymes*, blight, benight, bright, fight, flight, fright, height, light, knight, night, might, plight, right, tight, slight, sight, spright, wight, affright, alight, aright, foresight, delight, despite, unsight, upright, bedight, oversight. *Allowable rhymes*, eight, weight, etc., bit, hit, etc., favorite, hypocrite, infinite, requisite, opposite, apposite, exquisite, etc.

ITH.—Pith, smith, frith.

ITHE.—Hithe, blithe, tithe, scythe, writhe, lithe. *Allowable rhyme*, with.

IVE.—Five, dive, alive, gyve, hive, drive, rive, shrive, strive, thrive, arrive, connive, contrive, deprive, derive, revive, survive. *Allowable rhymes*, give, live, sieve, forgive, outlive, fugitive, laxative, narrative, prerogative, primitive, sensitive, vegetive, affirmative, alternative, contemplative, demonstrative, diminutive, distributive, donative, inquisitive, lenitive, massive, negative, perspective, positive, preparative, provocative, purgative, restorative.

IX.—Fix, six, flix, mix, affix, infix, prefix, transmix, intermix, crucifix, &c., *and the plurals of nouns and third persons of verbs in* ick, *as* wicks, licks, etc. *Allowable rhymes, the plurals of nouns and third persons singular of verbs in* ike, *as* pikes, likes, etc.

IXT.—Betwixt. *Rhymes, the preterits and participles of verbs in* ix, *as* fixed, mixed, etc.

ISE and IZE.—Prize, wise, rise, size, guise, disguise, advise, authorize, canonize, chastise, civilize, comprise, criticise, despise, devise, enterprise, excise, exercise, idolize, immortalize, premise, revise, signalize, solemnize, surprise, surmise, suffice, sacrifice, sympathize, tyrannize, *and the plurals of nouns and third persons singular, present tense, of verbs ending in* ie *or* y, *as* pies, lies, he replies, etc. *Allowable rhymes*, miss, hiss, precipice, etc.

O

O, *see* **OO** *and* **OW.**

OACH.—Broach, croach, proach, abroach, approach, encroach, reproach. *Perfect rhyme*, loach. *Allowable rhymes*, botch, notch, etc., mutch, hutch, etc.

OAD, *see* **AUD** *and* **ODE. OAF**, *see* **OFF. OAK**, *see* **OKE. OAL**, *see* **OLE. OAM**, *see* **OME. OAN**, *see* **ONE. OAP**, *see* **OPE. OAR**, *see* **ORE. OARD**, *see* **ORD. OAST**, *see* **OST. OAT**, *see* **OTE. OATH**, *see* **OTH.**

OB.—Fob, bob, mob, knob, scb, rob, throb. *Perfect rhymes*, swab, squab. *Allowable rhymes*, daub, globe, robe, dub, etc.

OBE.—Globe, lobe, probe, robe, conglobe. *Allowable rhymes*, fob, mob, etc., rub, dub, etc., daub, etc.

OCE, *see* **OSE.**

OCK.—Block, lock, cock, clock, crock, dock, frock, flock, knock, mock, rock, shock, stock, sock. *Allowable rhymes*, oak, poke, cloak, etc., look, took, etc., buck, suck, etc.

OCT.—Concoct. *Rhymes, the preterits and participles of verbs in* ock, *as* blocked, locked, etc. *Allowable rhymes, the preterits and participles of verbs in* oak *and* oke, *as* croaked, soaked, yoked, etc.

OD.—Clod, God, rod, sod, trod, nod, plod, odd, shod. *Allowable rhymes*, ode, code, mode, etc., *and the preterits and participles of verbs in* ow, *as* sowed, did sow, etc.

ODE and OAD.—Bode, ode, code, mode, rode, abode, corrode, explode, forbode, commode, incommode, episode, etc. *Perfect rhymes*, road, toad, goad, load, etc., *and the preterits and participles of verbs in* ow, *as* owed, showed, etc. *Allowable rhymes*, blood, flood, clod, hod, nod, broad, fraud, etc. *See* **OOD.**

OE, *see* **OW.**

OFF and OUGH.—Off, scoff, etc. *Perfect rhymes*, cough, trough, etc. *Allowable rhymes*, oaf, loaf, etc., proof, roof, etc. *See* **OOF.**

OFT.—Oft, croft, soft, aloft, etc., *and the preterits and participles of verbs in* off *and* uff, *as* ruffed, scoffed, etc.

OG.—Hog, bog, cog, dog, clog, fog, frog, log, jog, etc. *Perfect rhymes*, dialogue, epilogue, agog, synagogue, catalogue, pedagogue. *Allowable rhymes*, rogue, vogue, etc.

OGUE.—Rogue, vogue, prorogue, collogue, disembogue. *Allowable rhymes*, bog, log, dialogue, etc.

OICE.—Choice, voice, rejoice. *Allowable rhymes*, nice, vice, rice, etc.

OID.—Void, avoid, devoid, etc., *and the preterits and participles of verbs in* oy, *as* buoyed, cloyed, etc. *Allowable rhymes*, hide, bide, ride, etc.

OIL.—Oil, boil, coil, moil, soil, spoil, toil, despoil, embroil, recoil, turmoil, disembroil. *Allowable rhymes*, isle, while, tile, etc.

OIN.—Coin, join, subjoin, groin, loin, adjoin, conjoin, disjoin, enjoin, purloin, rejoin. *Allowable rhymes*, whine, wine, fine, etc. *See* **INE.**

OINT.—Oint, joint, point, disjoint, anoint, appoint, disappoint, counterpoint. *Allowable rhymes*, pint.

OISE.—Poise, noise, counterpoise, equipoise, etc., *and the plurals of nouns and third persons singular, present tense, of verbs in* oy, *as* boys, cloys, etc. *Allowable rhymes*, wise, size, prize, *and the plurals of nouns and third persons singular, present tense, of verbs in* ie *or* y, *as* pies, tries, etc.

OIST.—Hoist, moist, foist. *Perfect rhymes, the preterits and participles of verbs in* oice, *as* rejoiced. *Allowable rhymes, the preterits and participles of verbs in* ice, *as* spiced.

OIT.—Coit, exploit, adroit, etc. *Allowable rhymes*, white, light, might, sight, mite, etc.

OKE.—Broke, coke, smoke, spoke, stroke, yoke, bespoke, invoke, provoke, revoke, etc. *Perfect rhymes*, choke, cloak, oak, soak. *Allowable rhymes*, stock, mock, etc., buck, luck, etc., talk, walk, etc., look, book, etc. *See* **OCK** *and* **OOK.**

OL.—Loll, doll, droll, extol, capitol, etc. *Allowable rhymes*, all, ball, etc., bawl, etc., hole, mole, etc., dull, mull, etc.

OLD.—Old, bold, cold, gold, hold, mold, scold, sold, told, behold, enfold, unfold, uphold, withhold, foretold, manifold, marigold. *Perfect rhymes, preterits and participles of verbs in* oll, owl, ole *and* oal, *as* rolled, cajoled, foaled, bowled, etc.

OLE.—Bole, dole, jole, hole, mole, pole, sole, stole, whole, shole, cajole, condole, parole, patrol, pistole, etc. *Perfect rhymes*, coal, foal, goal, sole, bowl, droll, prowl, roll, scroll, toll, troll, control, enroll, etc., soul, etc., to roll, etc. *Allowable rhymes*, gull, dull, etc., bull, full, etc., loll, doll, etc., tool, cool, etc.

OLEN.—Stolen, swollen.

OLT.—Bolt, colt, jolt, holt, dolt, molt, revolt, thunderbolt. *Allowable rhymes*, vault, fault, salt, etc.

OLVE.—Solve, absolve, resolve, convolve, involve, devolve, dissolve, revolve.

OM, *see* **UM.**

OME.—Loam, dome, home, tome. *Perfect rhymes*, foam, roam, comb. *Allowable rhymes*, dum, hum, come, bomb, etc., troublesome, etc. *See* **OOM.**

OMB, *see* **OOM. OMPT**, *see* **OUNT. ON**, *see* **UN.**

ON.—Don, on, con, upon, anon, etc. *Perfect rhymes*, gone, undergone, etc. *Allowable rhymes*, dun, run, won, etc., own, moan, etc., lone, bone, etc., Amazon, cinnamon, comparison, caparison, garrison, skeleton, union, jupon.

OND.—Pond, bond, fond, beyond, abscond, correspond, despond.

diamond, vagabond, etc., *and the preterits and participles of verbs in* on, *as* donned, conned, etc. *Allowable rhymes, the preterits and participles of verbs in* one, oan *and* un, *as* stoned, moaned, stunned, etc.

ONCE, *see* **UNCE.**

ONE.—Prone, bone, drone, throne, alone, stone, tone, lone, zone, atone, enthrone, dethrone, postpone, etc. *Perfect rhymes*, grown, flown, disown, thrown, sown, own, loan, shown, overthrown, groan, blown, moan, known *Allowable rhymes*, dawn, lawn, etc., on, con, etc., none, bun, dun, etc , moon, boon, etc

ONG.—Long, prong, song, thong, strong, throng, wrong, along, belong, prolong. *Allowable rhymes*, bung, among, hung, etc.

ONGUE, *see* **UNG.** **ONK,** *see* **UNK.**

ONSE.—Sconse, ensconce, etc. *Allowable rhymes*, once, nonce, askance, etc

ONT.—Font. *Perfect rhyme*, want. *Allowable rhymes*, front, affront, etc., confront, punt, runt, etc., *the abbreviated negatives*, won't, don't, etc

OO.—Coo, woo. *Nearly perfect rhymes*, shoe, two, too, who, etc., do, ado, undo, through, you, true, blue, flew, strew, etc. *Allowable rhymes*, know, blow, go, toe, etc

OOD.—Brood, mood, food, rood, etc. *Nearly perfect rhymes, the preterits and participles of verbs in* oo, *as* cooed, wooed, etc. *Allowable rhymes*, wood, good, hood, stood, withstood, understood, brotherhood, livelihood, likelihood, neighborhood, widowhood, etc., blood, flood, etc., feud, allude, habitude, etc., *the preterits and participles of verbs in* ue *and* ew, *as* brewed, strewed, etc., imbued, subdued, etc., bud, mud, etc., *and the three apostrophized auxiliaries*, would, could, should, *pronounced* wou'd, cou'd, shou'd, etc., ode, code, *and the preterits and participles of verbs in* ow, *as* crowed, rowed, etc., *also* nod, hod, etc.

OOF.—Hoof, proof, roof, woof, aloof, disproof, reproof, behoof. *Allowable rhymes*, huff, ruff, rough, enough, etc., off, scoff, etc

OOK.—Book, brook, cook, crook, hook, look, rook, shook, took, mistook, undertook, forsook, betook. *Allowable rhymes*, puke, fluke, etc., duck, luck, etc., broke, spoke, etc.

OOL.—Cool, fool, pool, school, stool, tool, befool. *Allowable rhymes*, pule, rule, etc., dull, gull, etc., bull, pull, etc., pole, hole, etc.

OOM.—Gloom, groom, loom, room, spoom, bloom, doom, etc. *Perfect rhymes*, tomb, entomb, *and the city* Rome. *Nearly perfect rhymes*, whom, womb, etc. *Allowable rhymes*, come, drum, etc., bomb, thumb, clomb, etc., plume, spume, etc., *and* from, home, comb, etc

OON.—Boon, soon, moon, noon, spoon, swoon, buffoon, lampoon, poltroon. *Allowable rhymes*, tune, prune, etc., bun, dun, etc., gone, done, etc., bone, alone, etc., moan, roan, etc. *See* **ONE.**

OOP.—Loop, poop, scoop, stoop, troop, droop, whoop, coop, hoop, etc. *Perfect rhymes*, soup, group, etc. *Allowable rhymes*, dupe, up, sup, tup, etc., cop, top, etc., cope, hope, etc.

OOR.—Boor, poor, moor, etc. *Perfect rhymes*, tour, amour, paramour, contour. *Allowable rhymes*, bore, pore, etc., pure, sure, etc., your, pour, etc., door, floor, etc., bur, cur, etc., sir, stir, etc

OOSE.—Goose, loose, etc. *Nearly perfect rhymes, the nouns* deuce, use, etc., profuse, seduce. *Allowable rhymes*, dose, jocose, globose, etc., moss, toss, etc., us, pus, thus, etc.

OOT.—Root, boot, coot, hoot, shoot. *Nearly perfect rhymes*, suit, fruit, etc., lute, impute, etc. *Allowable rhymes*, rote, vote, etc., goat, coat, etc., but, hut, soot, etc., foot, put, etc., hot, got, etc.

OOTH.—Booth, sooth, smooth. *Allowable rhymes*, tooth, youth, uncouth, forsooth, etc. *Though these are frequent, they are very improper rhymes, the* th *in one class being flat, and in the other sharp.*

OOZE.—Ooze, noose. *Perfect rhymes*, whose, choose, lose *Nearly perfect rhymes, the verbs* to use, abuse, etc. *Allowable rhymes*, doze, hose, etc., buzz *and* does, *the third persons singular of* do, *with the plurals of nouns and third persons singular, present tense, of verbs in* ow, o, oe, ew, ue, *as* foes, goes, throws, views, imbues, flues, etc.

OP.—Chop, hop, drop, crop, fop, top, prop, flop, shop slop, sop, stop, swap, underprop. *Allowable rhymes*, cope, trope, hope, etc., tup, sup, etc., coop, etc.

OPE.—Sope, hope, cope, mope, grope, pope, rope, scope, slope, tope, trope, aslope, elope, interlope, telescope, heliotrope, horoscope, antelope, etc., *and* ope, *contracted in poetry for* open. *Allowable rhymes*, hoop, coop, etc., lop, top, etc., tup, sup, etc.

OPT.—Adopt *rhymes perfectly with the preterits and participles of verbs in* op, *as* hopped, lopped, etc. *Allowable rhymes, the preterits and participles of verbs in* ope, upe, oop, *and* up, *as* coped, duped, hooped, cupped, etc.

OR.—Or, for, creditor, counselor, confessor, competitor, emperor, ancestor, ambassador, progenitor, conspirator, successor, conqueror, governor, abhor, metaphor, bachelor, senator, etc., *and every word in* or, *having the accent on the last, or last syllable but two, as* abhor, orator, etc. *Allowable rhymes*, bore, tore, etc., boar, hoar, etc., pure, endure, etc., pur, demur, etc., stir, sir, etc.

ORCH.—Scorch, torch, etc. *Allowable rhymes*, birch, smirch, church, etc., porch, etc.

ORCE.—Force, divorce, enforce, perforce, etc. *Perfect rhymes*, corse, coarse, hoarse, course, discourse, recourse, intercourse, source, resource, etc. *Allowable rhymes*, worse, purse, etc., horse, endorse, etc.

ORD.—Cord, lord, record, accord, abhorred. *Allowable rhymes*, hoard, board, aboard, ford, afford, sword, etc., word, curd, bird, etc., *and the preterits and participles of verbs in* ore, ur *and* ir, *as* bored, incurred, stirred, etc

ORE.—Bore, core, gore, lore, more, ore, pore, score, shore, snore, sore, store, swore, tore, wore, adore, afore, ashore, deplore, explore, implore, restore, forbore, forswore, heretofore, hellebore, sycamore. *Perfect rhymes*, boar, oar, roar, soar, four, door, floor, *and* o'er *for* over. *Allowable rhymes*, hour, sour, etc , pow'r *for* power, show'r *for* shower etc., bur, cur, etc., poor, your, etc., abhor, orator, senator, etc. *See* **OOR** *and* **OR.**

ORGE.—Gorge, disgorge, regorge, etc. *Allowable rhymes*, forge, urge, dirge, etc.

ORK.—Ork, cork, fork, stork, etc. *Allowable rhymes* pork, work.

ORLD.—World *rhymes perfectly with the preterits and participles of verbs in* url, *as* hurled, curled, etc.

ORM and ARM.—Form, storm, conform, deform, inform, perform, reform, misinform, uniform, multiform, transform *Allowable rhymes*, form (*a seat*) *and* worm.

ORN, *rhyming with* **HORN.**—Born, corn, morn, horn, scorn, thorn, adorn, suborn, unicorn, Capricorn. *Allowable rhymes, the participles* borne, (*suffered*) shorn, etc., *the verb* mourn, *the nouns* urn, turn, etc

ORN, *rhyming with* **MORN.**—Born, shorn, torn, worn, lorn, love lorn, sworn, forsworn, overborn, forlorn. *Perfect rhyme*, mourn *Allowable rhymes*, born, corn, etc., urn, burn, etc

ORSE, *see* **ORCE.**—Horse, endorse, unhorse *Allowable rhymes*, worse, curse, etc., remorse, coarse, course, corse, etc

ORST, *see* **URST.** **ORT,** *see* **ART.**

ORT, *rhyming with* **WART.**—Short, sort, exhort, consort, distort, extort, resort, retort, snort *Allowable rhymes*, fort, court, port, report, etc., dirt, shirt, etc., wort, hurt, etc.

ORT, *rhyming with* **COURT.**—Fort, port, sport, comport, disport, export, import, support, transport, report. *Allowable rhymes*, short, sort, etc., dirt, hurt, etc.

ORTH.—Forth, fourth. *Allowable rhymes*, north, worth, birth, earth, etc

OSE, (*sounded*) **OCE.**—Close, dose, jocose *Perfect rhymes*, morose, gross, engross, verbose. *Allowable rhymes*, moss, cross, etc., us, thus, etc.

OSE (*sounded*) **OZE.**—Close, dose, hose, pose, chose, gloze, froze, nose, prose, those, rose, compose, depose, disclose, dispose, discompose, expose, impose, inclose, interpose, oppose, propose, recompose, repose, suppose, transpose, arose, presuppose, foreclose, etc., *and the plurals of nouns and apostrophized preterits and participles of verbs in* ow, oe, o, etc., *as* rows, glows, foes, goes, etc. *Allowable rhymes, the verbs* choose, lose, etc., *and the plurals of nouns and third persons singular of verbs in* ow, *rhyming with* now, *as* cows, *and the word* buzz.

OSS.—Boss, loss, cross, dross, moss, toss, across, emboss. *Allowable rhymes, the nouns* close, dose, jocose, etc , *and* us, thus, etc

OST.—Cost, frost, lost, accost, etc., *and the preterits and participles of words in* oss, *as* mossed, embossed, etc , *the verb* exhaust, *and the noun* holocaust. *Allowable rhymes*, ghost, host, post, compost, most, etc., coast, boast, toast, etc., bust, must, etc , roost, *and the preterits and participles of verbs in* oose, *as* loosed, etc.

OT, *see* **AT.**—Clot, cot, blot, got, hot, jot, lot, knot, not, plot, pot, scot, shot, sot, spot, apricot, trot, rot, grot, begot, forgot, allot, besot, complot, counterplot. *Allowable rhymes*, note, vote, etc., boat, coat etc., but, cut, etc.

OTCH.—Botch, notch, etc. *Perfect rhyme*, watch. *Allowable rhymes*, much, such, etc

OTE.—Note, vote, mote, quote, rote, wrote, smote, denote, promote, remote, devote, anecdote, antidote, etc *Perfect rhymes*, boat, coat, bloat, doat, gloat, float, goat, oat, overfloat, afloat, throat, moat. *Allowable rhymes*, bout, flout, etc., hot, cot, etc., but, cut, etc., boot, hoot, etc

OTH.—Broth, cloth, froth, moth, troth, betroth. *Perfect rhyme*, wrath. *Allowable rhymes*, both, loth, sloth, oath, growth, etc., forsooth, *the noun* mouth, *and the solemn auxiliary* doth, *to which some poets add* loathe, clothe, *but I think improperly* *See* **OOTH.**

OU, *see* **OO** *and* **OW.** **OUBT,** *see* **OUT.**

OUCH.—Couch, pouch, vouch, slouch, avouch, crouch. *Allowable rhymes*, much, such, etc., coach, roach, etc.

OUD.—Shroud, cloud, proud, loud, aloud, crowd, overshroud, etc., *and the preterits and participles of verbs in* ow, *as he* bowed, vowed, etc. *Allowable rhymes, the preterits and participles of verbs in* ow, *as* owed, flowed, etc., blood, flood, etc., bud, mud, etc.

OVE.—Wove, inwove, interwove, alcove, clove, grove, rove, stove, strove, throve, drove. *Allowable rhymes*, dove, love, shove, glove, above, etc., move, behoove, approve, disprove, disapprove, improve, groove, prove reprove, etc.

OUGH, *see* **OFF, OW** *and* **UFF.**

OUGHT.—Bought, thought, ought, brought, forethought, fought, nought, sought, wrought, besought, bethought, methought, etc. *Perfect rhymes*, aught, naught, caught, taught, etc., *sometimes* draught. *Allowable rhymes*, not, yacht, etc., note, vote, etc., butt, hut, etc. hoot, root, etc

OUL, *see* **OLE** *and* **OWL.**

OULD.—Mould. *Perfect rhymes*, fold, old, cold, etc , *and the preterits and participles of verbs in* owl, ol *and* ole, *as* bowled, tolled, cajoled, etc *Allowable rhymes, the preterits and participles of verbs in* ull, *as* gulled, pulled, etc

OUNCE.—Bounce, flounce, renounce, pounce, ounce, denounce, pronounce

OUND.—Bound, found, mound, ground, hound, pound round, sound wound, abound, aground, around, confound, compound, expound, profound, rebound, redound, resound, propound, surround, etc., *and the preterits and participles of verbs in* own, *as* frowned, renowned, etc. *Allowable rhymes, the preterits and participles of verbs in* one, oan *and* un, *as* toned, moaned, sunned, etc., *consequently* fund, refund, etc., *and* wound (*a hurt*), *pronounced* woond

OUNG, *see* **UNG.**

OUNT.—Count, mount, fount, amount, dismount, remount, surmount, account, discount, miscount. *Allowable rhymes*, want, font, don't, won't, etc.

OUP, *see* **OOP.**

OUR.—Hour, lour, sour, our, scour, deflour, devour, etc., *rhymes perfectly with* bower, cower, flower, power, shower, tower, etc., *pronounced* bow'r, tow'r, etc. *Allowable rhymes*, bore, more, roar, pour, tour, moor, poor, etc., pure, sure, etc., sir, star, bur, cur, etc.

OURGE, *see* **URGE.** **OURNE,** *see* **ORN** *and* **URN.**

OURS.—Ours *rhymes perfectly with the plurals of nouns and third persons present of verbs in* our *and* ower, *as* hours, scours, deflours, bowers showers, etc. *Allowable rhymes, the plurals of nouns and third persons present of verbs in* oor *and* ure, *as* boors, moors, etc., cures, endures, etc.

OURS.—Yours *rhymes perfectly with the plurals of nouns and third persons present of verbs in* ure, *as* cures, endures, etc. *Allowable rhymes,* ours, *and its perfect rhymes and the plurals of nouns and third persons present of verbs in* oor, ore *and* ur, *as* boors, moors, etc., shores, pores, etc., burs, slurs, stirs, etc.

OURSE, *see* **ORCE. OURT,** *see* **ORT. OURTH,** *see* **ORTH. OUS,** *see* **US.**

OUS, *pronounced* **OUCE.**—House, mouse, chouse, etc. *Allowable rhymes, the nouns* close, dose, jocose, etc., deuce, use, produce, etc., us, thus, etc., moose, *and the noun* noose.

OUSE, *pronounced* **OUZE,** *see* **OWZE.**

OUT.—Bout, stout, out, clout, pout, gout, grout, route, scout, shout, snout, spout, stout, sprout, trout, about, devout, without, throughout, etc., *rhymes perfectly with* doubt, redoubt, misdoubt, drought, etc. *Allowable rhymes,* note, vote, etc., boat, coat, etc., lute, suit, etc., got, not, etc., nut, shut, hoot, boot, etc.

OUTH.—Mouth, south, *when nouns have the* th *sharp. The verbs* to mouth, to south, *may allowably rhyme with* booth, smooth, etc., *which see.*

OW, *sounded* **OU.**—Now, bow, how, mow, cow, brow, plow, sow, vow, prow, avow, allow, disallow, endow, etc. *Perfect rhymes,* bough, plough, slough, (*mire*), etc., thou. *Allowable rhymes,* go, no, blow, so, etc.

OW, *sounded* **OWE.**—Blow, stow, crow, bow, flow, glow, grow, know, low, mow, row, show, sow, strow, stow, slow, snow, throw, trow, below, bestow, foreknow, outgrow, overgrow, overflow, overthrow, reflow, foreshow, etc. *Perfect rhymes,* go, no, toe, foe, owe, wo, oh, so, lo, though, hoe, ho, ago, forego, undergo, dough, roe, sloe, *and the verb* to sew (*with the needle*). *Allowable rhymes,* now, cow, vow, do, etc. *See the last article.*

OWL, *see* **OLE.**—Cowl, growl, owl, fowl, howl, prowl, etc. *Perfect rhymes,* scowl, foul, etc. *Allowable rhymes,* bowl, soul, shoal, goal, etc., dull, gull, etc.

OWN, *see* **ONE.**—Brown, town, clown, crown, down, drown, frown, grown, adown, renown, embrown, etc. *Perfect rhyme,* noun. *Allowable rhymes,* tone, bone, moan, own, *and the participles* thrown, shown, blown.

OWSE, *see* **OUSE.**—Blouse. *Perfect rhymes,* brouse, trouse, rouse, spouse, carouse, souse, espouse, *the verbs* to house, mouse, etc., *and the plurals of nouns and third persons, present tense, of verbs in* ow, *as* brows, allows, etc. *Allowable rhymes,* hose, those, to dose, etc.

OX.—Ox, box, fox, equinox, orthodox, heterodox, etc. *Perfect rhymes, the plurals of nouns and third persons present of verbs in* ock, *as* locks, stocks, etc. *Allowable rhymes, the plurals of nouns and third persons present of verbs in* oke, oak, *and* uck, *as* strokes, oaks, cloaks, sucks, etc.

OY.—Boy, buoy, coy, employ, cloy, joy, toy, alloy, annoy, convoy, decoy, destroy, enjoy, employ.

OZE, *see* **OSE.**

U

UB.—Cub, club, dub, drub, grub, rub, snub, shrub, tub. *Allowable rhymes,* cube, tube, etc., cob, rob, etc.

UBE.—Cube, tube. *Allowable rhymes,* club, cub, etc.

UCE.—Truce, sluice, spruce, deuce, conduce, deduce, induce, introduce, produce, seduce, traduce, juice, reduce, etc., *rhyme perfectly with the nouns* use, abuse, profuse, abstruse, disuse, excuse, misuse, obtuse, recluse.

UCH, *see* **UTCH.**

UCK.—Buck, luck, pluck, suck, struck, tuck, truck, duck. *Allowable rhymes,* puke, duke, etc., look, took, etc.

UCT.—Conduct, deduct, instruct, obstruct, aqueduct. *Perfect rhymes, the preterits and participles of verbs in* uck, *as* ducked, sucked, etc. *Allowable rhymes, the preterits and participles of verbs in* uke *and* ook, *as* puked, hooked, etc.

UD.—Bud, scud, stud, mud, cud, *rhyme perfectly with* blood *and* flood. *Allowable rhymes,* good, hood, etc., rood, food, etc., beatitude, latitude.

UDE.—Rude, crude, prude, allude, conclude, delude, elude, exclude, excede, include, intrude, obtrude, seclude, altitude, fortitude, gratitude, intertude, latitude, longitude, magnitude, multitude, solicitude, solitude, vicissitude, aptitude, habitude, ingratitude, inaptitude, lassitude, plenitude, promptitude, servitude, similitude, etc. *Perfect rhymes,* leud, feud, etc., *and the preterits and participles of verbs in* ew, *as* stewed, viewed, etc. *Allowable rhymes,* bud, cud, etc., good, hood, etc., blood, flood, etc.

UDGE.—Judge, drudge, grudge, trudge, adjudge, prejudge.

UE, *see* **EW.**

UFF.—Buff, cuff, bluff, huff, gruff, luff, puff, snuff, stuff, ruff, rebuff, counterbuff, etc. *Perfect rhymes,* rough, tough, enough, slough (*cast skin*), chough, etc. *Allowable rhymes,* loaf, oaf, etc.

UFT.—Tuft. *Perfect rhymes, the preterits and participles of verbs in* uff, *as* cuffed, stuffed.

UG.—Lug, bug, dug, drug, hug, rug, slug, snug, mug, shrug, pug. *Allowable rhymes,* vogue, rogue, etc.

UICE, *see* **USE. UISE,** *see* **ISE** *and* **USE. UIE,** *see* **IE.**

UKE.—Duke, puke, rebuke, etc. *Nearly perfect rhymes,* cook, look, book, etc. *Allowable rhymes,* duck, buck, etc.

UL and ULL.—Cull, dull, gull, hull, lull, mull, null, trull, skull, annul, disannul. *Allowable rhymes,* fool, tool, etc., wool, bull, pull, full, bountiful, fanciful, sorrowful, dutiful, merciful, wonderful, worshipful, *and every word ending in* ful, *having the accent on the antepenultimate syllable.*

ULE.—Mule, pule, yule, rule, overrule, ridicule, misrule. *Allowable rhymes,* cull, dull, wool, full, bountiful *See the last article.*

ULGE.—Bulge, indulge, divulge, etc.

ULK.—Bulk, hulk, skulk.

ULSE.—Pulse, repulse, impulse, expulse, convulse.

ULT.—Result, adult, exult, consult, indult, occult, insult, difficult. *Allowable rhymes,* colt, bolt, etc.

UM.—Crum, drum, grum, gum, hum, mum, scum, plum, stum, sum, swum, thrum. *Perfect rhymes,* thumb, dumb, succumb, come, become, overcome burthensome, cumbersome, frolicsome, humorsome, quarrelsome, troublesome, martyrdom, christendom. *Allowable rhymes,* fume, plume, rheum, *and* room, doom, tomb, hecatomb.

UME.—Fume, plume, assume, consume, perfume, resume, presume, deplume.

UMP.—Bump, pump, jump, lump, plump, trump, stump, rump, thump.

UN.—Dun, gun, nun, pun, run, sun, shun, tun, stun, spun, begun. *Perfect rhymes,* son, won, ton, done, one, none, undone. *Allowable rhymes,* on, gone, etc., tune, prune, etc. *See* **ON.**

UNCE.—Dunce, once, etc. *Allowable rhyme,* sconce.

UNCH.—Bunch, punch, hunch, lunch, munch.

UND.—Fund, refund. *Perfect rhymes, the preterits and participles of verbs in* un, *as* shunned, etc.

UNE.—June, rune, untune, jejune, prune, importune, etc. *Nearly perfect rhymes,* moon, soon, etc. *Allowable rhymes,* bun, dun, etc.

UNG.—Clung, dung, flung, hung, rung, strung, sung, sprung, slung, stung, swung, unsung. *Perfect rhymes,* young, tongue, among. *Allowable rhymes,* song, long, etc.

UNGE.—Plunge, spunge, expunge, etc.

UNK.—Drunk, sunk, shrunk, stunk, spunk, punk, trunk, slunk. *Perfect rhyme,* monk.

UNT.—Brunt, blunt, hunt, runt, grunt. *Perfect rhyme,* wont (*to be accustomed*).

UP.—Cup, sup, up. *Allowable rhymes,* cope, scope, *and* dupe, group.

UPT.—Abrupt, corrupt, interrupt. *Perfect rhymes, the participles of verbs in* up, *as* supped, etc.

UR. Blur, cur, bur, fur, slur, spur, concur, demur, incur. *Perfect rhymes,* sir, stir. *Nearly perfect rhymes,* fir, etc. *Allowable rhymes,* pore, oar, etc.

URB.—Curb, disturb. *Nearly perfect rhymes,* verb, herb, etc. *Allowable rhyme,* orb.

URCH.—Church, lurch, birch. *Nearly perfect rhymes,* perch, search. *Allowable rhyme,* porch.

URD.—Curd, absurd. *Perfect rhymes,* bird, word, *and the preterits and participles of verbs in* ur, *as* spurred. *Allowable rhymes,* board, ford, cord, lord, etc., *and the preterits and participles of verbs in* ore, oar *and* or, *as* goared, oared, abhorred, etc., *also the preterits and participles of verbs in* ure, *as* cured, immured, etc. *See* **ORD.**

URE.—Cure, pure, dure, lure, sure, adjure, allure, assure, demure, conjure, endure, manure, enure, insure, immature, immure, mature, obscure, procure, secure, calenture, coverture, epicure, investiture, forfeiture, furniture, miniature, overture, portráiture, primogeniture, temperature. *Allowable rhymes,* poor, moor, power, sour, etc., cur, bur, etc.

URF.—Turf, scurf, etc.

URGE.—Purge, urge, surge, scourge. *Perfect rhymes,* verge, diverge, etc. *Allowable rhymes,* gorge, George, etc., forge, etc.

URK.—Lurk, Turk. *Perfect rhyme,* work. *Nearly perfect rhymes,* irk, jerk, perk.

URL, *see* **IRL.**—Churl, curl, furl, hurl, purl, uncurl, unfurl. *Nearly perfect rhymes,* girl, twirl, etc., pearl, etc.

URN.—Burn, churn, spurn, turn, urn, return, overturn. *Perfect rhymes,* sojourn, adjourn, rejourn.

URSE.—Nurse, curse, purse, accurse, disburse, imburse, reimburse. *Perfect rhyme,* worse. *Allowable rhymes,* coarse, corse, force, verse, disperse, horse, etc.

URST.—Burst, curst, accurst, etc. *Perfect rhymes,* thirst, worst, first.

URT.—Blurt, hurt, spurt. *Perfect rhymes,* dirt, shirt, flirt, squirt, etc. *Allowable rhymes,* port, court, short, snort, etc.

US.—Us, thus, buss, truss, discuss, incubus, overplus, amorous, boisterous, clamorous, credulous, dangerous, degenerous, generous, emulous, fabulous, frivolous, hazardous, idolatrous, infamous, miraculous, mischievous, mountainous, mutinous, necessitous, numerous, ominous, perilous, poisonous, populous, prosperous, ridiculous, riotous, ruinous, scandalous, scrupulous, sedulous, traitorous, treachorous, tyrannous, venomous, villainous, vigorous, adventurous, adulterous, ambiguous, blasphemous, dolorous, fortuitous, sonorous, gluttonous, gratuitous, incredulous, lecherous, libidinous, magnanimous, obstreporous, odoriferous, ponderous, ravenous, rigorous, slanderous, solicitous, timorous, valorous, unanimous, calamitous. *Allowable rhymes, the nouns* use, abuse, diffuse, excuse, *the verb* to loose, *and the nouns,* goose, deuce, juice, truce, etc., close, dose, house, mouse, etc.

USE, *with the* **S** *pure.*—*The nouns* use, disuse, abuse deuce, truce. *Perfect rhymes, the verb* to loose, *the nouns* goose, noose, moose. *Allowable rhymes,* us, thus, buss, etc.

USE (*sounded*) **UZE.**—Muse, *the verbs* to use, abuse, amuse, diffuse, excuse, infuse, misuse, peruse, refuse, suffuse, transfuse, accuse. *Perfect rhymes,* bruise, *the plurals of nouns and third persons singular of verbs in* ew *and* ue, *as* dews, imbues, etc. *Allowable rhymes,* buzz, does, etc.

USH.—Blush, brush, crush, gush, flush, rush, hush. *Allowable rhymes,* bush, push.

USK.—Busk, tusk, dusk, husk, musk.

UST.—Bust, crust, dust, just, must, lust, rust, thrust, trust, adjust, adust, disgust, distrust, intrust, mistrust, unjust, robust. *Perfect rhymes, the preterits and participles of verbs in* uss, *as* trussed, discussed, etc.

UT.—But, butt, cut, hut, gut, glut, jut, nut, shut, strut, englut, rut, scut, slut, smut, abut. *Perfect rhyme,* soot. *Allowable rhymes,* boot, etc., dispute, etc., boat, etc.

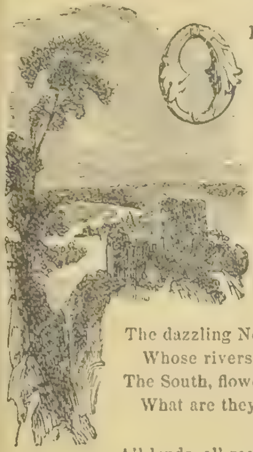
UTCH.—Hutch, crutch, Dutch. *Perfect rhymes,* much, such, touch,

UTE.—Brute, lute, flute, mute, acute, compute, confute, dispute, dilute, depute, impute, minute, pollute, refute, repute, salute absolute attribute, constitute, destitute, dissolute, execute, institute, irresolute, persecute, prosecute, prostitute, resolute, substitute. *Perfect rhymes,* fruit, recruit, etc. *Allowable rhymes,* hoot, etc., boat, etc., note, etc., hut, etc.

UX.—Flux, reflux, etc. *Perfect rhymes, the plurals of nouns and third persons of verbs in* uck, *as* ducks, trucks, etc. *Allowable rhymes, the plurals of nouns and third persons of verbs in* ook, uke, oak, etc., *as* cooks, pukes, oaks, etc.

Y, *see* **IE.**

HEREAFTER.



O LAND beyond the setting sun!
O realm more fair than poet's dream!
How clear thy silvery streamlets run,
How bright thy golden glories gleam!

Earth holds no counterpart of thine;
The dark-browed Orient, jewel-crowned,
Pales, as she bows before thy shrine,
Shrouded in mystery so profound.

The dazzling North, the stately West,
Whose rivers flow from mount to sea;
The South, flower-wreathed in languid rest,
What are they all compared with thee?

All lands, all realms beneath yon dome,
Where God's own hand hath hung the stars,
To thee with humblest homage come,
O world beyond the crystal bars!

Thou blest hereafter! Mortal tongue
Hath striven in vain thy speech to learn,
And fancy wanders, lost among
The flowery paths for which we yearn.

But well we know, that fair and bright,
Far beyond human ken or dream,
Too glorious for our feeble sight,
Thy skies of cloudless azure beam.

We know thy happy valleys lie
In green repose, supremely blest:
We know against thy sapphire sky
Thy mountain peaks sublimely rest

And sometimes even now we catch
Faint gleamings from the far-off shore,
And still with eager eyes we watch
For one sweet sign or token more.

For oh, the deeply loved are there!
The brave, the fair, the good, the wise
Who pined for thy serener air,
Nor shunned thy solemn mysteries.

There are the hopes that, one by one,
Died even as we gave them birth;
The dreams that passed ere well begun,
Too dear, too beautiful for earth.

The aspirations, strong of wing,
Aiming at heights we could not reach;
The songs we tried in vain to sing;
Thoughts too vast for human speech;

Thou hast them all, Hereafter! Thou
Shalt keep them safely till that hour
When, with God's seal on heart and brow,
We claim them in immortal power!

NEVER AGAIN.

NEVER again will the roses blow
For us as the roses we used to know

Oh! never again will the wide sky hold
Such wealth of glory and sunset gold;

And never again will I whisper, dear,
The pleasant fancies you smiled to hear;

And never again, at the day's decline,
Shall I sit with your little hand in mine,

And look at the beauty of sunset skies,
And the sweeter beauty of your sweet eyes.

Never again! for the dream is done
That a word, and a look, and a touch begun.

Love, if we *always* could dream, ah, then!
The words are as sad as "it might have been!"

For us, there is nothing but memory,
In the coming days, *of what could not be!*

Love, you are near me, and yet as far
As the round earth is from the fartherest star.

Kiss me and smile in my eyes once more,
Tho' your lips should quiver, and tears run o'er.

Put your hand in mine for one moment, one,
And then, good-bye, for the dream is done!

"WHAT PLANT WE IN THE APPLE-TREE?"

THE PLANTING OF THE APPLE-TREE.

BY WILLIAM CULLEN BRYANT.

COME, let us plant the apple-tree!
Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mold with kindly care,
And press it o'er them tenderly,
As round the sleeping infant's feet,
We softly fold the cradle sheet;
So plant we the apple-tree.

What plant we in this apple-tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs, where the thrush, with crimson breast,
Shall haunt, and sing, and hide her nest;
We plant, upon the sunny lea,
A shadow for the noontide hour,
A shelter from the summer shower,
When we plant the apple-tree.

What plant we in this apple-tree?
Sweets for a hundred flowery springs,
To load the May-wind's restless wings,
When, from the orchard-row, he pours
Its fragrance through our open doors;
A world of blossoms for the bee,
Flowers for the sick girl's silent room,
For the glad infant sprigs of bloom,
We plant with the apple-tree.

What plant we in this apple-tree?
Fruits that shall swell in sunny June,
And redden in the August noon,
And drop, as gentle airs come by,
That fan the blue September sky;
While children, wild with noisy glee,
Shall scent their fragrance as they pass,
And search for them the tufted grass
At the foot of the apple-tree.

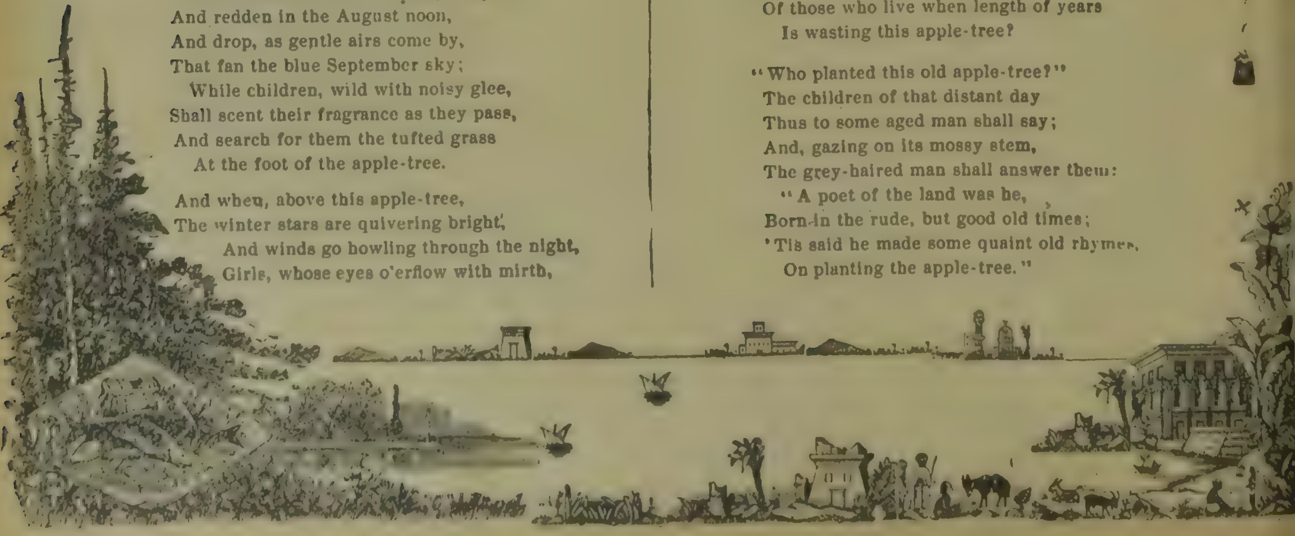
And when, above this apple-tree,
The winter stars are quivering bright,
And winds go howling through the night,
Girls, whose eyes o'erflow with mirth,
Shall peel its fruit by cottage hearth,
And guests in prouder homes shall see,
Heaped with the orange and the grape,
As fair as they in tint and shape,
The fruit of the apple-tree.

The fruitage of this apple-tree
Winds, and our flag of stripe and star,
Shall bear to coasts that lie afar,
Where men shall wonder at the view,
And ask in what fair groves they grew;
And they who roam beyond the sea
Shall think of childhood's careless day,
And long hours passed in summer play,
In the shade of the apple-tree.

Each year shall give the apple-tree
A broader flush of roseate bloom,
And loosen, when the frost-clouds lower,
The crisp brown leaves in thicker shower;
The years shall come and pass, but we
Shall hear no longer, where we lie,
The summer's song, the autumn's sigh,
In the boughs of the apple-tree.

And time shall waste this apple-tree.
Oh, when its aged branches throw
Thin shadows on the sward below,
Shall fraud and force and iron will
Oppress the weak and helpless still?
What shall the tasks of mercy be,
Amid the toils, the strifes, the tears,
Of those who live when length of years
Is wasting this apple-tree?

"Who planted this old apple-tree?"
The children of that distant day
Thus to some aged man shall say;
And, gazing on its mossy stem,
The grey-haired man shall answer them:
"A poet of the land was he,
Born in the rude, but good old times;
'Tis said he made some quaint old rhymes,
On planting the apple-tree."



The Old Oaken Bucket.

BY SAMUEL WOODWORTH.

How dear to this heart are the scenes of my childhood,
When fond recollection presents them to view!
The orchard, the meadow, the deep-tangled wildwood,
And every loved spot which my infancy knew!
The wide-spreading pond, and the mill that stood by it;
The bridge, and the rock where the cataract fell;
The cot of my father, the dairy-house nigh it,
And e'en the rude bucket that hung in the well:
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket which hung in the well.

The Old Oaken Bucket

That moss-covered vessel I hailed as a treasure;
For often at noon, when returned from the field,
I found it the source of an exquisite pleasure,
The purest and sweetest that nature can yield.
How ardent I seized it, with hands that were glowing,
And quick to the white-pebbled bottom it fell!
Then soon, with the emblem of truth overflowing,
And dripping with coolness, it rose from the well:
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket, arose from the well.

How sweet from the green, mossy brim to receive it,
As, poised on the curb, it inclined to my lips!
Not a full, blushing goblet could tempt me to leave it,
The brightest that beauty or revelry sips.
And now far removed from the loved habitation,
The tear of regret will intrusively swell,
As fancy reverts to my father's plantation,
And sighs for the bucket that hangs in the well:
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket that hangs in the well.

BETSEY AND I ARE OUT.

BY WILL M. CARLETON.

DRAW up the papers, lawyer, and make ’em good and stout;
For things at home are cross-ways, and Betsey and I are out.
We who have worked together so long as man and wife,
Must pull in single harness the rest of our nat’ral life.

“What is the matter?” say you. I vow! it’s hard to tell:
Most of the years behind us we’ve passed by very well;
I have no other woman—she has no other man,
Only we’ve lived together as long as ever we can.

So I’ve talked with Betsey, and Betsey has talked with me;
And we’ve agreed together that we can’t never agree;
Not that we’ve catched each other in any terrible crime;
We’ve been a gatherin’ this for years, a little at a time.

There was a stock of temper we both had for a start;
Although we ne’er suspected ’twould take us two apart·
I had my various failings, bred in the flesh and bone,
And Betsey, like all good women, had a temper of her own.

The first thing I remember whereon we disagreed,
Was somethin’ concerning heaven—a difference in our creed.
We arg’ed the thing at breakfast—we arg’ed the thing at tea—
And the more we arg’ed the question, the more we didn’t agree.

And the next that I remember was when we lost a cow;
She kicked the bucket, certain—the question was only—How?
I held my own opinion, and Betsey another had;
And when we were done a talkin’, we both of us was mad.

And the next that I remember, it started in a joke;
But full for a week it lasted, and neither of us spoke.
And the next was when I scolded because she broke a bowl;
And she said I was mean and stingy, and hadn’t any soul.

And so that bowl kept pouring dissensions in our cup;
And so that blamed cow-critter was always a comin’ up;
And so that heaven we arg’ed no nearer to us got;
But it gave us a taste of somethin’ a thousand times as hot.

And so the thing kept workin’, and all the self-same way;
Always somethin’ to arg’e, and somethin’ sharp to say.
And down on us come the neighbors, a couple dozen strong,
And lent their kindest service for to help the thing along.

And there has been days together—and many a weary week,
We was both of us cross and spunky, and both too proud to speak,
And I have been thinkin’ and thinkin’ the whole of the winter and fall,
If I can’t live kind with a woman, why, then I won’t at all.

And so I have talked with Betsey, and Betsey has talked with me,
And we’ve agreed together that we can’t never agree;
And what is hers shall be hers, and what is mine shall be mine;
And I’ll put it in the agreement, and take it to her to sign.

Write on the paper, lawyer—the very first paragraph—
Of all the farm and live stock, that she shall have her half;
For she has helped to earn it, through many a dreary day,
And it’s nothing more than justice that Betsey has her pay.

Give her the house and homestead; a man can thrive and roam,
But women are skeery critters, unless they have a home.
And I have always determined, and never failed to say,
That Betsey never should want a home, if I was taken away.

There’s a little hard money that’s drawin’ tol’rable pay;
A couple of hundred dollars laid by for a rainy day;
Safe in the hands of good men, and easy to get at;
Put in another clause, there, and give her half of that;

Yes, I see you smile, sir, at my givin’ her so much;
Yes, divorce is cheap, sir, but I take no stock in such.
True and fair I married her, when she was blithe and young;
And Betsey was al’ays good to me, except with her tongue.

Once, when I was young as you, and not so smart, perhaps,
For me she mittened a lawyer, and several other chaps;
And all of ’em was flustered and fairly taken down,
And I for a time was counted the luckiest man in town.

Once, when I had a fever—I won’t forget it soon—
I was hot as a basted turkey and crazy as a loon—
Never an hour went by when she was out of sight;
She nursed me true and tender, and stuck to me day and night.

And if ever a house was tidy, and ever a kitchen clean,
Her house and kitchen was as tidy as any I ever seen;
And I don’t complain of Betsey or any of her acts,
Exceptin’ when we’ve quarrelled and told each other facts

So draw up the paper, lawyer; and I’ll go home to-night,
And read the agreement to her and see if it’s all right.
And then in the mornin’ I’ll sell to a tradin’ man I know—
And kiss the child that was left to us, and out in the world I’ll go.

And one thing put in the paper, that first to me didn’t occur—
That when I’m dead at last, she shall bring me back to her;
And lay me under the maples I planted years ago,
When she and I was happy, before we quarrelled so.

And when she dies, I wish that she would be laid by me;
And lyin’ together in silence, perhaps we will agree;
And if ever we meet in heaven, I wouldn’t think it queer
If we loved each other the better because we quarrelled here.

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HOW BETSEY AND I MADE UP.

BY WILL M. CARLETON.

GIVE us your hand, Mr. Lawyer: how do you do to-day?
You drew up that paper—I s'pose you want your pay.
Don't cut down your figures; make it an X or a V;
For that 'ere written agreement was just the makin' of me.

Goin' home that evenin' I tell you I was blue,
Thinkin' of all my troubles, and what I was goin' to do;
And if my hosses hadn't been the steadiest team alive,
They'd 've tipped me over, certain, for I couldn't see where to drive.

No—for I was laborin' under a heavy load;
No—for I was travelin' an entirely different road;
For I was a-tracin' over the path of our lives ag'in,
And seein' where we missed the way, and where we might have been.

And many a corner we'd turned that just to quarrel led,
When I ought to've held my temper, and driven straight ahead;
And the more I thought it over the more these memories came,
And the more I struck the opinion that I was the most to blame.

And things I had long forgotten kept risin' in my mind,
Of little matters betwixt us, where Betsey was good and kind;
And these things flashed all through me, as you know things sometimes will
When a feller's alone in the darkness, and everything is still.

"But," says I, "we're too far along to take another track,
And when I put my hand to the plow I do not oft turn back;
And tain't an uncommon thing now for couples to smash in two;"
And so I set my teeth together, and vowed I'd see it through.

When I come in sight o' the house 'twas some'at in the night,
And just as I turned a hill-top I see the kitchen light:
Which often a han'some pictur' to a hungry person makes,
But it don't interest a feller much that's goin' to pull up stakes.

And when I went in the house, the table was set for me—
As good a supper 's I ever saw, or ever want to see;
And I crammed the agreement down my pocket as well as I could,
And fell to eatin' my victuals, which somehow didn't taste good.

And Betsey, she pretended to look about the house,
But she watched my side coat-pocket like a cat would watch a mouse;
And then she went to foolin' a little with a cup,
And intently readin' a newspaper, a-holdin' it wrong side up.

And when I'd done my supper, I drawed the agreement out,
And give it to her without a word, for she knowed what 'twas about;
And then I hummed a little tune, but now and then a note
Was bu'sted by some animal that hopped up in my throat.

Then Betsey, she got her specs from off the mantel-shelf,
And read the article over quite softly to herself;
Read it by little and little, for her eyes is gettin' old,
And lawyers' writin' ain't no print, especially when its cold.

And after she'd read a little, she gave my arm a touch,
And kindly said she was afraid I was 'lowin' her too much;
But when she was through she went for me, her face a-streamin' with tears,
And kissed me for the first time in over twenty years!

I don't know what you'll think, Sir—I didn't come to inquire—
But I picked up that agreement and stuffed it in the fire;
And I told her we'd bury the hatchet alongside of the cow;
And we struck an agreement never to have another row.

And I told her in the future I wouldn't speak cross or rash
If half the crockery in the house was broken all to smash;
And she said, in regards to heaven, we'd try to learn its worth
By startin' a branch establishment and runnin' it here on earth.

And so we sat a-talkin' three-quarters of the night,
And opened our hearts to each other until they both grew light;
And the days when I was winnin' her away from so many men
Was nothin' to that evenin' I courted her over again.

Next mornin' an ancient virgin took pains to call on us,
Her lamp all trimmed and a-burnin' to kindle another fuss;
But when she went to pryin' and openin' of old sores,
My Betsey rose politely, and showed her out-of-doors.

Since then I don't deny but there's been a word or two;
But we've got our eyes wide open, and know just what to do;
When one speaks cross the other just meets it with a laugh,
And the first one's ready to give up considerable more than half.

Maybe you'll think me soft, Sir, a-talkin' in this style,
But somehow it does me lots of good to tell it once in a while;
And I do it for a compliment—'tis so that you can see
That that there written agreement of yours was just the makin' of me.

So make out your bill, Mr. Lawyer: don't stop short of an X;
Make it more if you want to, for I have got the checks.
I'm richer than a National Bank, with all its treasures told,
For I've got a wife at home now that's worth her weight in gold

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Maud Muller.

By permission of Samson, Lowe & Co.

BY JOHN G. WHITTIER.

MAUD MULLER, on a summer's day,
Raked the meadow, sweet with hay.

Beneath her torn hat glowed the wealth
Of simple beauty and rustic health.

The sweet song died, and a vague unrest
And a nameless longing filled her breast—

A wish, that she hardly dared to own,
For something better than she had known.

"Maud Muller, on a summer's day,
Raked the meadow, sweet with hay."

Singing, she wrought, and her merry glee
The mock-bird echoed from his tree.

But, when she glanced to the far-off town,
White from its hill-slope looking down,

The Judge rode slowly down the lane,
Smoothing his horse's chestnut mane.

He drew his bridle in the shade
Of the apple-trees to greet the maid,

She stooped where the cool spring bubbles up
And filled for him her small tin cup.

And blushed as she gave it, looking down
On her feet so bare, and her tattered gown.

“Thanks!” said the Judge, “a sweeter draught
From a fairer hand was never quaffed.”

He spoke of the grass and flowers and trees,
Of the singing birds and the humming bees;

Then talked of the haying, and wondered whether
The cloud in the west would bring foul weather.

And Maud forgot her brier-torn gown,
And her graceful ankles bare and brown,

And listened, while a pleased surprise
Looked from her long-lashed, hazel eyes.

At last, like one who for delay
Seeks a vain excuse, he rode away.

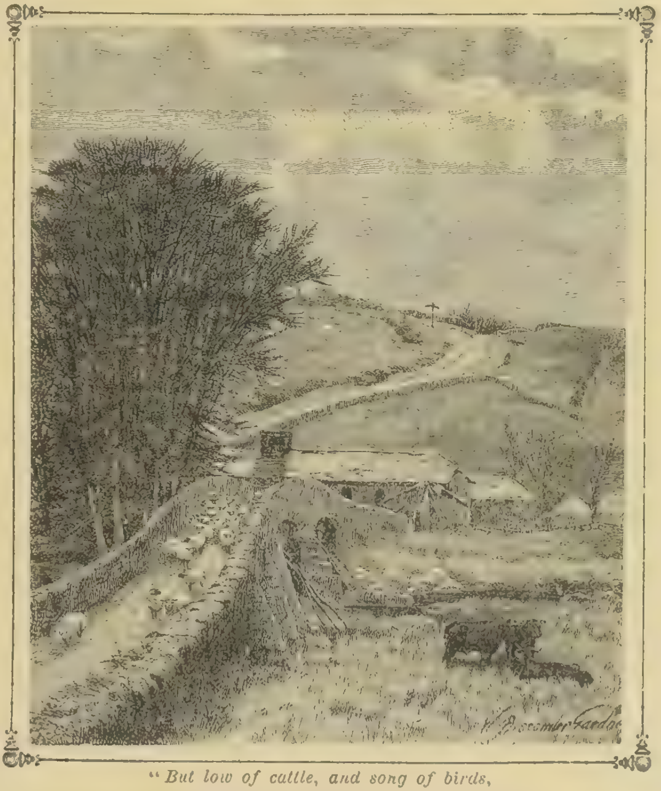
Maud Muller looked and sighed: “Ah me!
That I the Judge's bride might be!

“He would dress me up in silks so fine,
And praise and toast me at his wine.

“My father would wear a broadcloth coat;
My brother should sail a painted boat.

“I'd dress my mother so grand and gay;
And the baby should have a new toy each day.

“And I'd feed the hungry and clothe the poor,
And all should bless me who left our door.”



“But low of cattle, and song of birds,
And health, and quiet, and loving words.”

The Judge looked back as he climbed the hill,
And saw Maud Muller standing still:

“A form more fair, a face more sweet,
Ne'er hath it been my lot to meet.

“And her modest answer and graceful air
Show her wise and good as she is fair.

“Would she were mine, and I to-day;
Like her, a harvester of hay.

“No doubtful balance of rights and wrongs,
No weary lawyers with endless tongues,

“But low of cattle, and song of birds,
And health, and quiet, and loving words.”

But he thought of his sister, proud and cold,
And his mother, vain of her rank and gold.

So, closing his heart, the Judge rode on,
And Maud was left in the field alone.

But the lawyers smiled that afternoon,
When he hummed in court an old love-tune.

And the young girl mused beside the well,
Till the rain on the unraked clover fell.

He wedded a wife of richest dower,
Who lived for fashion, as he for power.

Yet oft, in his marble hearth's white glow,
He watched a picture come and go;

And sweet Maud Muller's hazel eyes
Looked out in their innocent surprise.

Oft, when the wine in his glass was red,
He longed for the wayside well instead,

And closed his eyes on his garnished rooms,
To dream of meadows and clover-blooms;

And the proud man sighed with a secret pain,
“Ah, that I were free again!

“Free as when I rode that day
Where the barefoot maiden raked the hay.”

She wedded a man unlearned and poor,
And many children played round her door.

But care and sorrow, and child-birth pain,
Left their traces on heart and brain.

And oft, when the summer sun shone hot
On the new-mown hay in the meadow lot,

And she heard the little spring brook fall
Over the roadside, through the wall,

In the shade of the apple-tree again
She saw a rider draw his rein,

And, gazing down with timid grace,
She felt his pleased eyes read her face.

Sometimes her narrow kitchen walls
Stretched away into stately halls;

The weary wheel to a spinnet turned,
The tallow candle an astral burned;

And for him who sat by the chimney lug,
Dozing and grumbling o'er pipe and mug,

A manly form at her side she saw,
And joy was duty and love was law.

*"And she heard the little spring-brook fall
Over the roadside, through the wall."*

Then she took up her burden of life again,
Saying only, "It might have been!"

Alas for maiden, alas for Judge,
For rich repiner and household drudge!

God pity them both! and pity us all,
Who vainly the dreams of youth recall;

For of all sad words of tongue or pen,
The saddest are these: "It might have been!"

Ah, well! for us all some sweet hope lies
Deeply buried from human eyes;

And, in the hereafter, angels may
Roll the stone from its grave away!

ABSENCE.

BY FRANCES ANNE KEMBLE.

WHAT shall I do with all the days and hours
That must be counted, ere I see thy face?
How shall I charm the interval that lowers
Between this time and that sweet time of grace?

Shall I in slumber steep each weary sense—
Weary with longing? Shall I flee away
Into past days, and with some fond pretense
Cheat myself to forget the present day?

Shall love for thee lay on my soul the sin
Of casting from me God's great gift of time?
Shall I, these mists of memory locked within,
Leave and forget life's purposes sublime?

Oh, how, or by what means, may I contrive
To bring the hour that brings thee back more near?
How may I teach my drooping hope to live
Until that blessed time, and thou art here?

I'll tell thee; for thy sake, I will lay hold
Of all good aims, and consecrate to thee,
In worthy deeds, each moment that is told,
While thou, beloved one! art far from me.

For thee, I will arouse my thoughts to try
All heavenward flights, all high and holy strains;
For thy dear sake, I will walk patiently
Through these long hours, nor call their minutes pains.

I will this dreary blank of absence make
A noble task-time; and will therein strive
To follow excellence, and to o'ertake
More good than I have won, since yet I live.

So may this doomed time build up in me
A thousand graces, which shall thus be thine;
So may my love and longing hallowed be,
And thy dear thought an influence divine.

WE PARTED IN SILENCE.

BY MRS. CRAWFORD.

WE PARTED in silence, we parted by night,
On the banks of that lonely river;
Where the fragrant limes their boughs unite
We met—and we parted forever!
The night-bird sung, and the stars above
Told many a touching story
Of friends long passed to the kingdom of love,
Where the soul wears its mantle of glory.

We parted in silence,—our cheeks were wet
With the tears that were past controlling:
We vowed we would never, no, never forget,
And those vows, at the time, were consoling;
But those lips that echoed the sounds of mine
Are as cold as that lonely river;
And that eye, that beautiful spirit's shrine,
Has shrouded its fires forever.

And now, on the midnight sky I look,
And my heart grows full of weeping;
Each star is to me a sealed book,
Some tale of that loved one keeping.
We parted in silence, we parted in tears,
On the banks of that lonely river;
But the odor and bloom of those bygone years
Shall hang o'er its waters forever.

CHANGES.

WHOM first we love, you know, we seldom wed.
Time rules us all. And life, indeed, is not
The thing we planned it out, ere hope was dead;
And then, we women cannot choose our lot.

Much must be borne which it is hard to bear;
Much given away which it were sweet to keep.
God help us all! who need, indeed, His care:
And yet, I know the Shepherd loves His sheep.

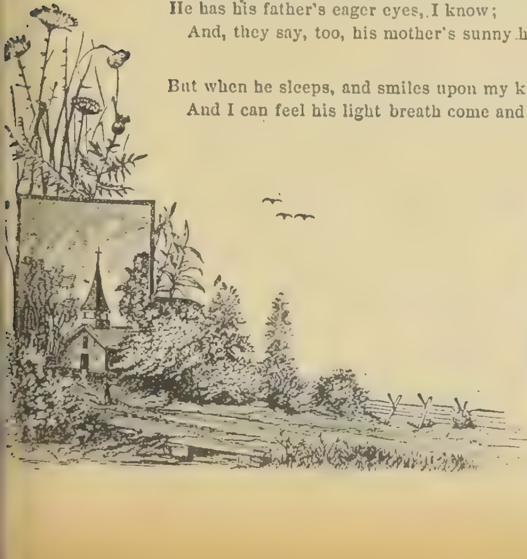
My little boy begins to babble now,
Upon my knee, his earliest infant prayer;
He has his father's eager eyes, I know;
And, they say, too, his mother's sunny hair.

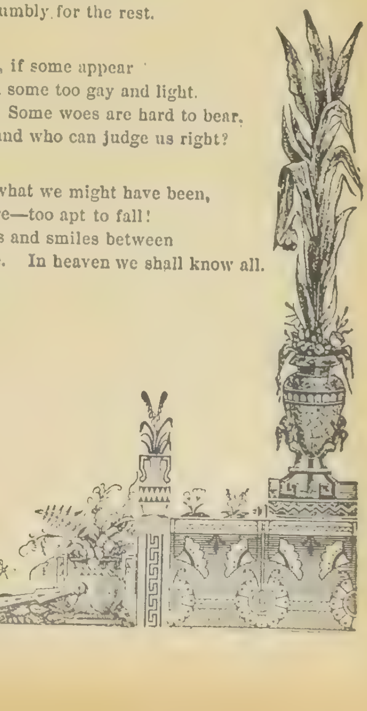
But when he sleeps, and smiles upon my knee,
And I can feel his light breath come and go,
I think of one (Heaven help and pity me!)
Who loved me, and whom I loved, long ago;

Who might have been . . . ah! what, I dare not think!
We are all changed. God judges for us best.
God help us do our duty, and not shrink,
And trust in Heaven humbly for the rest.

But blame us women not, if some appear
Too cold at times; and some too gay and light.
Some griefs gnaw deep. Some woes are hard to bear.
Who knows the past? and who can judge us right?

Ah! were we judged by what we might have been,
And not by what we are—too apt to fall!
My little child—he sleeps and smiles between
These thoughts and me. In heaven we shall know all.





THE EVENING BELLS.

BY THOMAS MOORE.

WHOSE evening bells, those evening bells!
How many a tale their music tells
Of youth, and home, and native clime,
When I last heard their soothing chime!

Those pleasant hours have passed away,
And many a heart that then was gay,
Within the tomb now darkly dwells,
And hears no more those evening bells.

And so it will be when I am gone;
That tuneful peal will still ring on,
When other bards shall walk these dells
And sing your praise, sweet evening bells.

A MESSAGE.

BY EBEN E. REXFORD.

YOU ARE dying, my friend!
Your bark will go drifting, ere breaking of day,
Toward the shores lying over the shadowy bay;
And at morn you will see, rising fair through the mist,
The hills which the sunshine eternal has kissed.

You are going away!
You will meet on the shores, which your vessel will find,
Dear friends who sailed outward, and left us behind;
You will know them, and clasp them, and kiss them once more,
Grown young again there, on the beautiful shore.

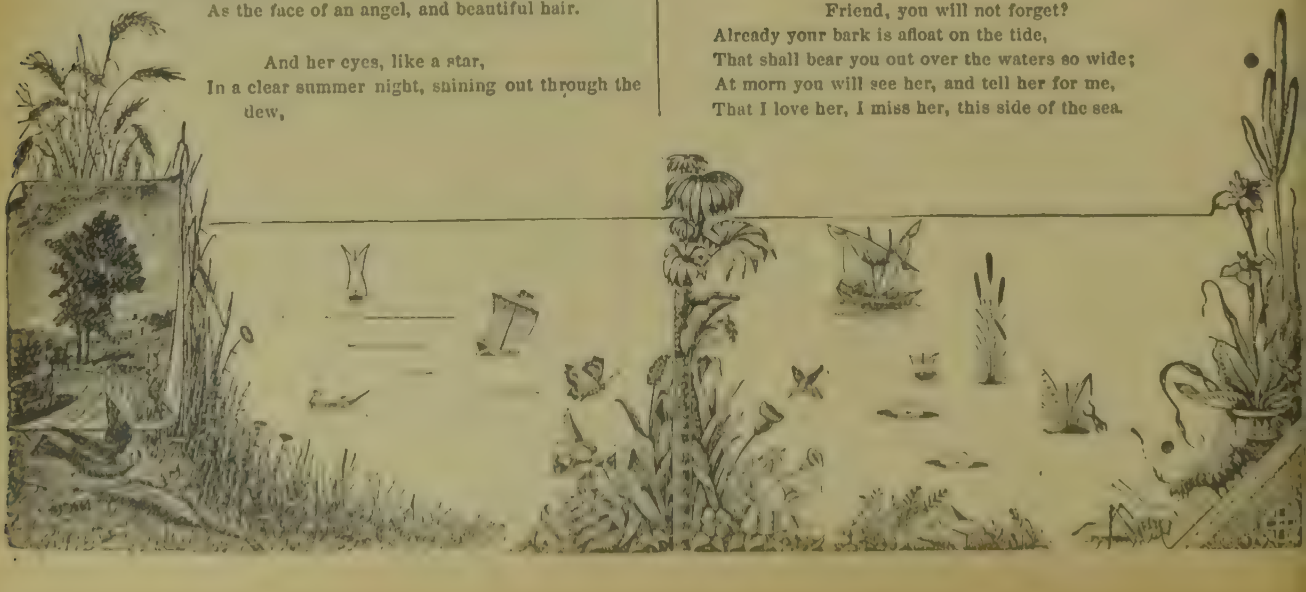
Dear friend, when you meet
The woman I loved, on the shore far away,
Will you give her the message I give you to-day?
You will know her, I know, by her face, that was fair
As the face of an angel, and beautiful hair.

And her eyes, like a star,
In a clear summer night, shining out through the dew,
Falling down, like a kiss, from the furthermost blue.
And her voice, when she greets you, you'll know as of old,
Her voice, and her face in its tresses of gold.

O, tell her, my friend,
That I miss her so much since she left me that night,
When the mists of the sea drifted over my sight,
And hid her in shadows, so dense and so deep,
That, remembering the time, even now I must weep.

And tell her for me,
That I wait for the morn, which for her has begun,
When our ways, which were severed on earth, shall be one;
I shall come to her, over the wide solemn sea,
And clasp her, and claim her—that tell her for me.

Friend, you will not forget?
Already your bark is afloat on the tide,
That shall bear you out over the waters so wide;
At morn you will see her, and tell her for me,
That I love her, I miss her, this side of the sea.



OVER THE HILL TO THE POOR-HOUSE.*

BY WILL M. CARLETON.

OVER the hill to the poor-house I'm trudgin' my weary way—
I, a woman of seventy, and only a trifle gray—
I, who am smart an' chipper, for all the years I've told,
As many another woman, that's only half as old.

Over the hill to the poor-house—I can't make it quite clear!
Over the hill to the poor-house—it seems so horrid queer!
Many a step I've taken a-toilin' to and fro,
But this is a sort of journey I never thought to go

What is the use of heapin' on me a pauper's shame?
Am I lazy or crazy? am I blind or lame?
True, I am not so supple, nor yet so awful stout,
But charity ain't no favor, if one can live without.

I am willin' and anxious an' ready any day,
To work for a decent livin', an' pay my honest way;
For I can earn my victuals, an' more too, I'll be bound,
If anybody only is willin' to have me round.

Once I was young and han'some—I was, upon my soul—
Once my cheeks was roses, my eyes as black as coal;
And I can't remember, in them days, of hearin' people say,
For any kind of reason, that I was in their way.

'Taint no use of boastin', or talkin' over free,
But many a house an' home was open then to me;
Many a han'some offer I had from likely men,
And nobody ever hinted that I was a burden then.

And when to John I was married, sure he was good and smart,
But he and all the neighbors would own I done my part;
For life was all before me, an' I was young an' strong,
And I worked the best that I could in tryin' to get along.

And so we worked together; and life was hard but gay,
With now and then a baby, for to cheer us on our way;
Till we had half a dozen, an' all growed clean an' neat,
An' went to school like others, an' had enough to eat.

So we worked for the childr'n, and raised 'em every one;
Worked for 'em summer and winter, just as we ought to 've done;
Only perhaps we humored 'em, which some good folks condemn,
But every couple's childr'n's a heap the best to them.

Strange how much we think of our blessed little ones!—
I'd have died for my daughters, I'd have died for my sons;
And God he made that rule of love; but when we're old and gray,
I've noticed it sometimes somehow fails to work the other way.

Strange, another thing: when our boys an' girls was grown,
And when, exceptin' Charley, they'd left us there alone;
When John he nearer an' nearer come, an' dearer seemed to be,
The Lord of Hosts he come one day an' took him away from me.

Still I was bound to struggle, an' never to cringe or fall—
Still I worked for Charley, for Charley was now my all;
And Charley was pretty good to me, with scarce a word or frown,
Till at last he went a-courtin', and brought a wife from town.

She was somewhat dressy, an' hadn't a pleasant smile—
She was quite conceity, and carried a heap o' style;
But if ever I tried to be friends, I did with her, I know;
But she was hard and proud, an' I couldn't make it go.

She had an edication, an' that was good for her;
But when she twitted me on mine 'twas carryin' things too fur;
An' I told her once 'fore company (an' it almost made her sick),
That I never swallowed a grammar, or et a 'rithmetic.

So 'twas only a few days before the thing was done—
They was a family of themselves, and I another one;
And a very little cottage for one family will do,
But I have never seen a house that was big enough for two.

An' I never could speak to suit her, never could please her eye,
An' it made me independent, an' then I didn't try;
But I was terribly staggered, an' felt it like a blow,
When Charley turned ag'in me, an' told me I could go.

I went to live with Susan, but Susan's house was small,
And she was always a-hintin' how snug it was for us all.
And what with her husband's sisters, and what with childr'n three,
'Twas easy to discover that there wasn't room for me.

An' then I went to Thomas, the oldest son I've got,
For Thomas' buildings 'd cover the half of an acre lot;
But all the childr'n was on me—I couldn't stand their sauce—
And Thomas said I needn't think I was comin' there to boss.

An then I wrote to Rebecca,—my girl who lives out West,
And to Isaac, not far from her—some twenty miles at best;
And one of 'em said 'twas too warm there, for any one so old,
And t'other had an opinion the climate was too cold.

So they have shirked and slighted me, an' shifted me about—
So they have well-nigh soured me, an' wore my old heart out;
But still I've borne up pretty well, an' wasn't much put down,
Till Charley went to the poor-master, an' put me on the town.

Over the hill to the poor-house—my childr'n dear, good-bye;
Many a night I've watched you when only God was nigh;
And God 'll judge between us; but I will al'ays pray
That you shall never suffer the half I do to-day.

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* From "Farm Ballads." Published by Harper & Brothers.

OVER THE HILL FROM THE POOR-HOUSE.

BY WILL M. CARLETON

I who was always counted, they say
Rather a bad stick any way,
Splintered all over with dodges and tricks,
Known as the "worst of the deacon's six;"
I, the truant, saucy and bold,
The one black sheep in my father's fold,
"Once on a time," as the stories say,
Went over the hill on a winter's day—
Over the hill to the poor-house.

Tom could save what twenty could earn;
But givin' was somethin' he ne'er could learn;
Isaac could half o' the Scriptures speak,
Committed a hundred verses a week;
Never forgot, an' never slipped;
But "Honor thy father and mother" he skipped.
So over the hill to the poor-house.

As for Susan, her heart was kind
An' good—what there was of it, mind,
Nothin' too big an' nothin' too nice,
Nothin' she wouldn't sacrifice
For one she loved; an' that 'ere one
Was herself, when all was said an' done.
An' Charley an' 'Becca meant well, no doubt,
But anyone could pull 'em about.

An' all our folks ranked well, you see,
Save one poor fellow, and that was me;
An' when, one dark an' rainy night,
A neighbor's horse went out of sight,
They hitched on me as the guilty chap
That carried one end of the halter-strap.
An' I think, myself, that view of the case
Wasn't altogether out o' place;
My mother denied it, as mothers do,
But I'm inclined to believe 'twas true.

Though for me one thing might be said—
That I, as well as the horse, was led;
And the worst of whisky spurred me on,
Or else the deed would have never been done.
But the keenest grief I ever felt,
Was when my mother beside me knelt,
An' cried an' prayed till I melted down,
As I wouldn't for half the horses in town.
I kissed her fondly, then and there,
An' swore henceforth to be honest and square.

I served my sentence—a bitter pill
Some fellows should take, who never will;
And then I decided to "go out West,"
Concludin' 'twould suit my health the best;
Where, how I prospered, I never could tell,
But Fortune seemed to like me well.
An' somehow, every vein I struck
Was always bubblin' over with luck;
An' better than that, I was steady an' true,
An' put my good resolutions through.
But I wrote to a trusty old neighbor, an' said,
"You tell 'em, old fellow, that I am dead,
An' died a Christian; 'twill please 'em more
Than if I had lived the same as before."

But when this neighbor he wrote to me,
"Your mother is in the poor-house," says he;
I had a resurrection straightway,
An' started for her that very day;
And when I arrived where I was grown,
I took good care that I shouldn't be known;
But I bought the old cottage, through and through,
Of some one Charley had sold it to;
And held back neither work nor gold,
To fix it up as it was of old;
The same big fire-place, wide and high,
Flung up its cinders toward the sky;
The old clock ticked on the corner-shelf—
I wound it an' set it a-goin' myself;
An', if everything wasn't quite the same,
Neither I nor Manly was to blame;
Then—over the hill to the poor-house!

One bloomin', blusterin' winter's day,
With a team an' cutter I started away;
My fiery nags was as black as coal;
(They some'at resembled the horse I stole;)
I hitched an' entered the poor-house door—
A poor old woman was scrubbin' the floor;
She rose to her feet in great surprise
And looked, quite startled, into my eyes;
I saw the whole of her trouble's trace
In the lines that marred her dear old face;
"Mother!" I shouted, "your sorrows are done!
You're adopted along o' your horse-thief son.
Come over the hill from the poor-house!"

She didn't faint; she knelt by my side,
An' thanked the Lord till I fairly cried.
An' maybe our ride wasn't pleasant and gay,
An' maybe she wasn't wrapped up that day;
An' maybe our cottage wasn't warm and bright;
An' maybe it wasn't a pleasant sight,
To see her a-gettin' the evenin's tea,
An' frequently stoppin' and kissin' me;
An' maybe we didn't live happy for years,
In spite of my brothers' and sisters' sneers,
Who often said, as I have heard,
That they wouldn't own a prison bird
(Though they're gettin' over that, I guess,
For all of them owe me more or less.)

But I've learned one thing, and it cheers a man
In always a-doin' the best he can;
That whether, on the big book, a blot
Gets over a fellow's name or not,
Whenever he does a deed that's white
It's credited to him fair and right.
An' when you hear the great bugle's notes,
An' the Lord divides his sheep and goats;
However they may settle my case,
Wherever they may fix my place,
My good old Christian mother, you'll see,
Will be sure to stand right up for me.
So over the hill from the poor-house!

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MISCELLANEOUS USEFUL INFORMATION.

Silver is capable of being highly polished, and evolves a clear ringing sound when struck. It is harder than gold and softer than copper, and is one of the most ductile of the metals. It is malleable, may be hammered into very thin leaves, and may be drawn out into very fine wire, the thinnest silver leaf having a thickness of only $\frac{1}{100000}$th of an inch, and one grain of the metal being capable of yielding 400 feet of wire. It possesses a high degree of tenacity, a wire with a diameter of $\frac{1}{12}$th of an inch being able to support a weight of 188 lbs. It requires a heat of 1873° Fahr. to fuse it, and on cooling expands at the moment of solidification. It is an excellent conductor of heat and electricity, and is not affected even by exposure to a moist atmosphere at any temperature. Although it does not rust or become oxidised, it usually becomes tarnished on prolonged exposure to the air, owing to the formation of a film of sulphide (or sulphuret) of silver, and this change occurs more rapidly in towns than in the country, in consequence of sulphuretted hydrogen being more abundant in the atmosphere of the former than of the latter.

Glacier is the name given to immense masses of ice, which are formed above the snow-line, on lofty mountains, and descend into the valleys to a greater or less distance, often encroaching on the cultivated regions. Glaciers are derived from the snow which falls during summer as well as winter on the summits of high mountains. Every fresh fall of snow adds a little to the height of the mountain, and, were there no agents at work to get rid of it, the mountains would be gradually rising to an indefinite elevation. Avalanches and glaciers, however, carry the snow into warmer regions, where it is reduced to water; in the one, the snow slips from the steep mountain slopes, and rushes rapidly down; in the other, it gradually descends, and is converted into ice in its progress. The snow which forms the glacier at its origin has a very different appearance and consistence from the ice of which it consists at its lower termination. The most remarkable feature of glaciers is their motion. It was long known to scientists that they move, but it is only within the last few years that it has received due attention from scientific men. To glacial action is due many startling changes of the earth's surface.

The Plesiosaurus was a remarkable genus of fossil sea-reptiles, the species of which are found in the Lias, Oolite, and Cretaceous measures. Its remains are so abundant and so perfectly preserved, that we are as well acquainted with skeletons of many of its species as we are with those of any living animals. These represent a strange animal, the structure of which Cuvier considered to be the most singular, and its character the most anomalous, that had been discovered amid the ruins of former worlds. In the words of Buckland: "To the head of a lizard, it united the teeth of a crocodile, a neck of enormous length, resembling the body of a serpent, a trunk and tail having the proportions of an ordinary quadruped, the ribs of a chameleon, and the paddles of a whale."

Milton's "Paradise Lost." This great poem was originally planned as a mystery, then some idea of treating it as a drama haunted the author's mind; finally, however, he resolved to write an epic poem on the Fall of Man. The poem was published in 1667. He received five pounds from his publisher, and a promise of other five pounds when 1,300 copies should have been sold.

Ginseng is a root highly esteemed in China as a medicine, being universally regarded as possessing the most extraordinary virtues and as a remedy for almost all diseases, but particularly for exhaustion of body or mind. It is sometimes sold for its weight in gold.

Abousambul is a place on the left bank of the Nile, in Nubia, the site of two very remarkable rock-cut temples, perhaps the oldest existing specimens of architecture in the world. The larger temple contains fourteen apartments, hewn out of the solid rock. The first and largest of these is 57 feet long, and 52 feet broad, and is supported by two rows of massy square pillars (four in each row) 30 feet high. To each of the pillars is attached a standing colossus, reaching to the roof, overlaid with a kind of stucco, and painted with gaudy colours. In front of the temples are four colossal seated figures—the largest pieces of Egyptian sculpture yet discovered. Reproductions of two of these, on the scale of the original (65 feet in height), form very striking objects in the Crystal Palace at Sydenham, where also may be seen a fac-simile, on a small scale, of the temple itself. These figures are supposed to represent Rameses the Great (or Sesostris), whose achievements are described on the painted walls of the temple.

Abracadabra is a word said to be of Persian origin, and to designate in that language Mithra, the sun-god. It was in former times the most venerated of those magical formulas that were constructed out of the letters of the alphabet, and was supposed to be highly efficacious for the cure of fevers, and especially quartan and semi-quartan agues. Serenus Sammonicus gives the following directions for its use: Write the letters of the word so as to form a triangle, capable of being read many ways, on a square piece of paper. Fold the paper so as to conceal the writing, and stitch it into the form of a cross with white thread. This amulet wear in the bosom, suspended by a linen ribbon, for nine days. Then go in dead silence, before sunrise, to the banks of a stream that flows eastward, take the amulet from off the neck, and fling it backwards into the water. If you open or read it, the charm is destroyed. The adjoining is one of the principal forms of arranging this mystic word.

ABRACADABRA
ABRACADABR
ABRACADAB
ABRACADA
ABRACAD
ABRACA
ABRAC
ABRA
ABR
AB
A

Gunpowder is a well-known explosive mixture composed of sulphur, nitre, and charcoal. Of use in several trades, its principal employment is in the discharge, for war or sport, of projectiles from firearms, and in the processes of blasting during mining or quarrying. The chemical processes which occur in the ignition of gunpowder are commonly described as follows: When the powder is ignited, the oxygen of the nitre combines with the charcoal or carbon to form carbonic acid, the potassium combines with the sulphur to form sulphide (or sulphuret) of potassium, and the nitrogen is liberated. Powder consisting of one equivalent each of nitre and sulphur, and three equivalents of carbon, would contain 74·8 per cent. of nitre, 11·9 per cent. of sulphur, and 13·3 per cent. of carbon or charcoal. It is easily shown that one volume of such powder would yield 296 volumes of mixed carbonic acid and nitrogen gases, after the ordinary reduction for temperature and pressure, although from the intense heat developed at the moment of explosion the actual dilatation amounts to at least 1,500 times the volume of the powder employed. The only solid residue is sulphide of potassium, and part of this is volatilised by the heat of the explosion, causing a whitish smoke by its combustion, while the part that is not burned gives the peculiar odour to the washings of the gun-barrel.

The Seven Sleepers, the heroes of a legend, which is first related by Gregory of Tours in the close of the sixth century (*De Gloria Martyrum*, c. 95), but the date of which is assigned to the third century, and to the persecution of the Christians under Decius. During the flight of the Christians from the persecution, seven Christians of Ephesus took refuge in a cave near the city, where they were discovered by their pursuers, who walled up the entrance in order to starve them to death. A miracle was interposed on their behalf: they fell into a preternatural sleep, in which they lay for nearly two hundred years. On awakening, they imagined that their sleep had been but of a single night; and on one of the party (supposing the persecution still in progress) going into the city to purchase provisions privately, he was amazed to find erected in triumph on the churches and other buildings a cross, which, as it seemed, but a few hours before he had seen the object of contempt and blasphemy. They all died at the same moment, as if by one common mysterious destiny.

Mineral Wool is an important product of modern times, discovered in 1871, formed by the conversion of molten metal into thread-like fibres by steam or air under pressure. It is also named "silicate cotton," and is valuable for all purposes of insulation or where a non-conducting fabric is required.

Lake Superior, the largest body of fresh water in the world, is the highest and most westerly of the great lakes lying between Canada West and the United States. Its general form is nearly semi-lunar, the outer curve being towards the north. Greatest length from east to west 438 miles; greatest breadth 166 miles; area about 33,000 square miles. The surface of the lake is about 600 feet above the level of the sea, and its mean depth 1,000 feet, so that its bottom is 400 feet below the level of the sea. Its surface has an elevation of about 22 feet above that of Lake Huron and Lake Michigan. The greater portion of this rise is at the Sault Ste. Marie, a strong rapid about a mile in length, at the commencement of the River St. Mary, which transmits the waters of Lake Superior to Lake Huron. The water of Lake Superior is remarkable for its coldness, purity, and transparency. It never freezes over, but the bays are sealed up in winter, and a rim of ice extends to some distance all around the shore.

The Golden Age. In the mythologies of most peoples and religions there exists a tradition of a better time, when the earth was the common property of man, and produced spontaneously all things necessary for an enjoyable existence. The land flowed with milk and honey, beasts of prey lived peaceably with other animals, and man had not yet, by selfishness, pride, and other vices and passions, fallen from a state of innocence. The Greeks and Romans placed this age under the rule of Saturn; and many of their poets have turned this poetic *matériel* to admirable account, and defined the gradual decadence of the world as the Silver, the Brass, and the Iron Ages, holding out at the same time the consolatory hope that the pristine state of things will one day return.

Diamonds of South Africa. The modern discovery of diamonds came about in this wise. In 1867 a certain John O'Reilly, trader and hunter, on his way from the interior reached the junction of two rivers, and stopped for the night at the house of a farmer named Van-Niekerk. The children were playing on the earth floor with some pretty pebbles they had found the day before in the river. One of these pebbles attracted O'Reilly's attention. He said, picking it up, "That might be a diamond." Niekerk laughed, and said he could have it; it was no diamond; if it was there were plenty around there. However, O'Reilly was not to be laughed out of his idea, and said that if Niekerk didn't object he would take it with him to Cape Town and see what it was, and if it proved to be of value he would give him half the proceeds. On the way down, a long journey, he stopped at Colesburg, at the hotel, and showed the pebble, scratching with it a pane of glass. His friends, laughing, scratched glass with a gunflint, and threw the pebble out of the window, telling O'Reilly not to make a fool of himself. However, O'Reilly persevered, got it to Dr. Atherstone, near the coast, who announced that in truth it was a diamond of 22½ carats. It was sold for £600. I am glad to say that O'Reilly divided fairly with Niekerk. The latter remembered that he had seen an immense stone in the hands of a Kaffir witch-doctor, who used it in his incantations. He found the fetish-man, gave him five hundred sheep, horses, and nearly all he possessed, and sold it the same day to an experienced diamond buyer for £11,200. This was the famous "Star of South Africa." It weighed 84½ carats in the rough, and was found to be a gem quite the rival of any Indian stone in purity and brilliance. After it had been cut it was bought by the Earl of Dudley, and is now known as the "Dudley" diamond. The natives crawled over the ground and found many more, and the excitement grew and became intense. By 1869 parties in ox-waggons had worked their way over the weary plains to the Vaal River. From all parts of the colony and from foreign lands people swarmed, and soon, like the creation of a dream, a tented city of twelve thousand or more grew at Pniel and Klipdritt, the opposite banks of the stream, where diamonds were found plentifully and of excellent quality by sorting over the boulder-drift. Soon hundreds of cradles, like those used by the Australian gold-diggers, were rocking on the edge of the stream, supplied with the precious gravel by a large force of diggers, sievers, and carriers. People were thunderstruck at their success. Poor men with a turn of the hand became rich. Hotels, bakeries, breweries, drinking saloons, and shops were erected, and reaped rewards quite as large as did the diggers. It was a marvellous scene at night, when the opposite camps were lit up with lights shining through the tent-cloth buildings.

WEIGHTS AND VALUES OF THE LARGEST DIAMONDS IN THE WORLD.

Name.	Weight.	Value.
Orloff	193 carats	£100,000
Pitt	136 "	£120,000
Pigott	98 "	£10,000
Cape	300 "	£20,000
Kohinoor	102½ "	£400,000
Sanci	78 "	£20,000
Dudley	54½ "	£150,000
Grand Mogul	280 "	£71,000

The Koh-i-noor originally weighed 800 carats, but was reduced to 279 by the awkwardness of the cutter. It was recut in 1852, and now weighs 102½ carats.

PTOMANES are microscopic bodies discovered by the Italian scientist, Professor Solme, in tinned meats, etc., that have been exposed to the air. The poison resulting from putrefaction due to the presence of Ptomanes is like that of Indian poison curare. It is believed that the various cases of poisoning from eating tinned goods have arisen from the presence of Ptomanes.

ACADEMY, a name originally applied to the philosophical school of Plato, and derived from the place in which that philosopher was accustomed to meet and converse with his pupils. This was a garden or grove in the suburbs of Athens, said to have once belonged to the hero Academus, and by him to have been presented to the citizens for a gymnasium.

ANAXIMANDER, was a Greek mathematician and philosopher, the son of Praxiades, and the disciple and friend of Thales, born at Miletus, 610 B.C., died 546. His principal study was mathematics. The invention of geographical maps is ascribed to him. It would seem that he did not believe in the generation of anything in the proper sense of the word, but supposed that the infinite atoms or units of which primary matter is composed merely change their relative positions in obedience to a moving power residing in it. He taught that the earth is of the form of a cylinder, and that it floats in the midst of the universe; that it was formed by the drying up of moisture by the sun, and that animals are produced from moisture.

THE WINTER PALACE at St. Petersburg, destroyed by fire in 1837, but soon after rebuilt, is certainly the largest, and, in one sense, probably the most magnificent palace in the world. It is 700 feet long, and during the residence of the emperor within it is inhabited by 6,000 people.

THE ALBAN LAKE, or Lago di Castello, about 18 miles from Rome, is formed in the basin of an extinct volcano, and has a circumference of 6 miles, with the enormous depth of more that 1,000 feet. Its elevation is nearly 1,000 feet above sea-level. When the Romans were at war with the Veientes (390 B.C.) this lake rose to an extraordinary height without any apparent cause. Etruscan diviners declared that the conquest of Veii depended upon letting off the waters of the lake. Stimulated by this the Romans, under the direction of the Etruscans, opened a tunnel through the lava wall which bounds it. In the execution of this work they acquired the art of mining, which they now applied to undermine the walls of Veii. The tunnel, which still remains, and still fulfils its ancient office, is 1½ mile in length, with a height of 7 feet, and a width of 4 feet.

THE ANCIENT CITY OF EPHESUS, one of the twelve Ionic cities of Asia Minor, was situated in Lydia, near the mouth of the river Caystrus. It was founded by Androclus, son of Codrus. Subdued first by the Lydian, and next by the Persian king, it was included, after the death of Alexander the Great, in the territories of Lysimachus (281 B.C.), by whom it was greatly strengthened. Ultimately, it came into the possession of the Romans; and in the time of Augustus, when Strabo wrote, it was "the greatest place of trade of all the cities of Asia, west of Taurus." This was also its condition when visited by St. Paul, who resided here three years; but the destruction of its great temple by the Goths, in 260 A.D., gave it a blow from which it never recovered. Near the west extremity of the town are found some massive structures, which have since 1868 been carefully excavated, sometimes from beneath 18 feet of soil. It is now certain that these stand on the site of the famous *Temple of Diana*. This marvellous building, one of the seven wonders of the world, was originally built by Chersiphron; but after its destruction by Herostratus (356 B.C.), it was rebuilt by the inhabitants in a style of greater splendour than before. It was the largest Greek temple ever constructed. Its length was 425 feet, width 220, the number of its columns 128, of which 36 were carved, and their height 60 feet. The site of Ephesus is now occupied by some wretched villages, the principal of which is Ayasaluk.

ALCOHOL, is a limpid, colourless liquid, of a hot pungent taste, and having a slight but agreeable smell. It is the characteristic ingredient of fermented drinks, and gives them their intoxicating quality. The source of alcohol is the fermentation of sugar or other saccharine matter. Sugar is the produce of the vegetable world. Some plants contain free sugar, and still more contain starch, which can be converted into sugar. The best vegetable substances, then, for yielding alcohol are those that contain the greatest abundance of sugar or starch.

Alexander the Great, son of Philip of Macedon and Olympias, daughter of Neoptolemus, born at Pella 356 B.C. His boyish exclamation, "My father will leave nothing for me to do!" indicated his early and lofty ambition. His education was committed first to Leonidas, then to Lysimachus, and afterwards to Aristotle. This great philosopher withdrew him to a distance from the court, and instructed him in every branch of human learning, especially in what relates to the art of government, while at the same time he disciplined and invigorated his body by gymnastic exercises. He was sixteen years of age when his father marched against Byzantium, and left the government in his hands during his absence. Two years afterwards he displayed singular courage at the battle of Chæronea (338 B.C.), where he overthrew the Sacred Band of Thebans. Philip, being appointed generalissimo of the Greeks, was preparing for a war with Persia, when he was assassinated (336 B.C.), and when Alexander, not yet twenty years of age, ascended the throne. After punishing his father's murderers he went into the Peloponnesus, and in a general assembly of the Greeks he caused himself to be appointed to the command of the forces against Persia, and, having appointed Antipater his deputy in Europe, prepared to prosecute the war. He crossed the Hellespont in the spring of 334 B.C., with 30,000 foot and 5,000 horse, attacked the Persian satraps at the river Granicus, and gained a complete victory, overthrowing the son-in-law of Darius with his own lance. Egypt hailed him as its deliverer, and the battle of Arbela made him master of Asia. The victory of Issus placed the whole of Persia in his power. His marvellous successes now began to dazzle his own judgment and to inflame his passions. He became a slave to debauchery, and his caprices were as cruel as they were ungrateful. In a fit of drunkenness and at the instigation of Thais, an Athenian courtesan, he set fire to Persepolis, the wonder of the world, and reduced it to a heap of ashes. Having discovered a conspiracy in which the son of Parmenio was implicated he put both father and son to death, though Parmenio himself was innocent of all knowledge of the affair. In 329 he penetrated to the furthest known limits of Northern Asia, and overthrew the Scythians on the banks of the Jaxartes. In the following year he subdued the whole of Sogdiana, and married Roxana, whom he had taken prisoner. She was the daughter of Oxyartes, one of the enemy's captains, and was said to be the handsomest of the virgins of Asia. In the year 327 B.C., Alexander proceeded to the conquest of India, then known only by name. He crossed the Indus, near to the modern Attock, and pursued his way under the guidance of a native prince to the Hydaspes (modern Jelum), where he was opposed by Porus, another native prince, whom he overthrew after a bloody contest. Thence he marched as lord of the country through that part of India which is now called the Punjab, establishing Greek colonies. As he was returning from Ecbatana to Babylon it is said that the Magi foretold that the latter city would prove fatal to him; but Alexander despised their warnings, and, in spite of the advice of his friends, marched to Babylon, before reaching which, however, he was met by ambassadors from all parts of the world—Libya, Italy, Carthage, Greece, the Cythians, Celts, and Iberians. Here he again occupied himself with gigantic plans for the future, both of conquest and civilisation, when he was suddenly taken ill after a banquet, and died eleven days afterwards, 323 B.C. He diffused the language and civilisation of Greece wherever victory led him, and planted Greek kingdoms in Asia which continued to exist for some centuries. To Alexander the ancient world owed a vast increase of its knowledge in geography, natural history, etc. He taught Europeans the road to India, and gave them the first glimpses of the magnificence and splendour which have dazzled and captivated their imagination for two thousand years.

Aluminium is one of the metals present in clay, granite, and other rocky and earthy substances. It was discovered by Woehler in 1828, and was re-examined by him in 1846, when he obtained the metal in minute globules or beads by heating a mixture of chloride of aluminium and sodium. In 1855 the French chemist Deville showed, as the result of a series of experiments, that aluminium could be prepared on a large scale and in a compact form without much difficulty. It is a white metal somewhat resembling silver, but possessing a bluish hue which reminds one of zinc. It is very malleable and ductile; in tenacity it approaches iron, and it takes a high polish. When heated in a furnace it fuses, and can then be cast in moulds into ingots. Exposed to dry or moist air it is unalterable, and does not oxidise as lead and zinc do. It is the lightest metal in use; it weighs no more than glass—that is to say, one-quarter as heavy as silver, and about two-fifths more than water. Napoleon III. had the eagles of the French army standards made of aluminium instead of silver, with a reduction of three-fourths of weight for the same size. This lightness has determined its use in the construction of very delicate balances designed to register fractional weights. Sulphuretted hydrogen, which tarnishes silver, has no effect on aluminium.

Ulfilas, the celebrated translator of the Bible into Gothic, was born about 318 A.D., north of the Danube, among a Gothic population. Consecrated bishop in 348, he was expelled by his heathen compatriots from his native place, and sought refuge, together with a number of newly-converted Christians, in Lower Mœsia, at the foot of the Hæmus, where he remained for thirty years. In 388 he went to Constantinople (whither he had gone once before to assist at a council in 360), and died there shortly afterwards. He was one of the chief lights of Arianism, in the interest of which he exerted himself with the utmost energy. Familiar with Latin, Greek, and Gothic, and accustomed to write in each of them, he undertook to render the whole Bible, with the exception of the two warlike books of Samuel and Kings, into a language which till then had, as far as we know, never been used for any literary composition of importance. Up to the ninth century this sacred and national work accompanied the Goths in all their migrations. The Swedes captured and took it to Upsala, where it still remains in the University Library, under the name of the *Codex Argenteus*.

Composition of Various Alloys.—The composition of the more commonly occurring and commercially important alloys is as follows: Plumber's solder, 1 tin, 2 lead; soft solder, 2 tin, 1 lead; common pewter, 4 tin, 1 lead; gun-metal, 9 copper, 1 tin; bronze, 9 copper, 1 tin and zinc; cymbals and Chinese gongs, 4 copper, 1 tin; bell-metal, 3 copper, 1 tin; speculum metal, 2 copper, 1 tin; pot-metal, or cock-metal, 2 copper, 1 lead; gilding-metal, 16 copper, 1 to 1¼ zinc; Mannheim gold, pinchbeck or bath-metal, 16 copper, 4 zinc; Bristol brass, for soldering, 16 copper, 6 zinc; ordinary brass, for casting, 16 copper, 8 zinc; Muntz sheathing-metal, 16 copper, 10⅔ zinc; spelter solder, for copper and iron, 16 copper, 12 zinc; spelter solder, for brass-work, 16 copper, 16 zinc; Mosaic gold, 16 copper, 16½ zinc; hardest silver solder, 4 silver, 1 copper; hard silver solder, 3 silver, 1 copper; soft silver solder, 2 silver, 1 copper; German silver, 100 copper, 60 zinc, 40 nickel; type-metal, ordinary, 15 lead, 4 antimony, 1 tin, or 14 lead, 5 antimony, 1 tin—small types, 4 lead, 1 antimony—large types, 6 lead, 1 antimony; stereotype metal, 48 lead, 6 antimony, 1 tin; Britannia metal, 50 tin, 4 antimony, 4 bismuth, 1 copper.

Amazons.—According to a very ancient tradition, they were a nation of women who suffered no men to remain among them, but marched to battle under the command of their queen, and formed for a long time a formidable State. They held occasional intercourse with the men of the neighbouring States. If boys were born to them they either sent them to their fathers or killed them; but they brought up the girls for war, and burned off their right breasts that they might not be prevented from bending the bow. From this custom they received the name of Amazons, that is "breastless." Such is the ordinary tale, the origin of which is perhaps to be accounted for by supposing that vague reports, exaggerated and poetically embellished, had reached the Greeks of the peculiar way in which the women of various Caucasian districts lived, performing military duties which elsewhere devolved on husbands, and also of the numerous examples of female heroism which travellers inform us still distinguish the women of that region. In later times, however, the word Amazon has been supposed to have some connection with the Circassian word "Maza," signifying the moon, as if the myth of the Amazons had taken its origin in the worship of the moon, which prevailed on the borders of Asia.

Anaxagoras, one of the most eminent philosophers of the Ionic school, born at Clazomenæ, in Ionia, 500 B.C. When only twenty years of age he went to Athens, where in the course of time he acquired a high reputation and had several illustrious pupils, among whom were Pericles, Euripides, Socrates, and Archelaus. But at last, being accused of impiety towards the gods, he was condemned to death. His sentence, however, was commuted into banishment for life, through the eloquence of Pericles. He withdrew to Lampsacus on the Hellespont, where he died in the seventy-third year of his age. The old man was accustomed to say proudly in his exile, "It is not I who have lost the Athenians, but the Athenians who have lost me." When on his death-bed the magistrates of the town asked what funeral honours he desired, "Give the boys a holiday," was the quaint reply of the sage; and for several centuries the day of his death was commemorated in all the schools of Lampsacus. His great contribution to ancient philosophy was his doctrine as to the origin of all things. He held that all matter existed originally in the condition of atoms; that these atoms, infinitely numerous and infinitely divisible, had existed from eternity, and that order was first produced out of this infinite chaos of minutiæ through the influence and operation of an eternal intelligence.

Mark Antony, the Roman triumvir, born in 83 B.C. In the campaign against Aristobulus in Palestine and in Egypt Antony distinguished himself by his courage and activity, and ingratiated himself with the soldiers. After assisting Cæsar in Gaul he went to Rome in 50 B.C. to advance the interests of the former, who stood in great danger from the hostility of the oligarchical party, and was appointed an augur, and chosen one of the tribunes of the people. In the following year, on account of his adherence to the party of Cæsar he was expelled from the curia, and fled to Cæsar, who made use of this event as a pretext for his war against Pompey. At the outbreak of this war Antony received the appointment of commander-in-chief in Italy. In the battle of Pharsalia he commanded the left wing of Cæsar's army. In 47 he was made Master of the Horse by Cæsar, who left him to govern Italy during his absence in Africa. Antony, as usual, disgraced himself; got perpetually drunk; divorced his wife, and married an actress, with whom he paraded offensively through the chief towns of the peninsula. In 44 B.C. he married Fulvia, the widow of Clodius; was made consul, and vainly endeavoured to prevail on the Romans to recognise Cæsar as emperor. After the assassination of Cæsar he played the part so well described by Shakespeare, and by his funeral oration and the well-timed display of Cæsar's bloody robe so wrought on the passions of the people that the conspirators were compelled to escape from Rome, leaving the successful orator for a while in possession of almost power absolute. Antony paid a visit to Athens, and then went into Asia to arrange his dispute with Cleopatra Queen of Egypt, whose conduct had offended the triumviri. The queen herself appeared to answer his challenge, and captivated Antony by her beauty and address. He followed her to Egypt and lived in idleness until aroused by tidings of a quarrel between his own relatives and those of Octavianus, Cæsar's heir. This led to a short war and a peace ratified by Antony's marriage with the sister of Octavianus. He returned to Cleopatra and squandered the wealth of Rome in gifts to her. Octavianus made use of this fact to excite the indignation of the Romans, and a war between the rivals resulted in the defeat of Antony, 31 B.C., at Actium. He returned to Egypt, where, with Cleopatra, he once more forgot political cares and vexations, until his amusements were suddenly interrupted by the arrival of Octavianus at Alexandria. Antony now roused himself, made a charge with his cavalry and repelled the enemy; but the advantage was only momentary. Deserted by the Egyptian fleet, as by his own army, and suspecting that even Cleopatra had conspired against him, he went to her palace, from which the queen had escaped. Deceived by a false message informing him of the death of Cleopatra, he committed suicide by falling upon his sword in the year 30 B.C.

CLEOPATRA, the daughter of the Egyptian king, Ptolemy Auletes, was born 69 B.C., and, according to the will of her father, should have inherited the throne along with her brother, Ptolemy Dionysus, who was also her husband. Her claim, however, being opposed, Julius Cæsar came to Alexandria, 48 B.C., to interpose in the quarrel, and in the Alexandrian War Ptolemy Dionysus fell, and Cleopatra, who was now married to her younger brother, Ptolemy, a boy of eleven years, was established upon the throne of Egypt. She subsequently, when in her thirty-ninth year, committed suicide by allowing an asp to bite her arm, 30 B.C. Cleopatra's Mummy is now to be seen in the British Museum.

CLEOPATRA'S NEEDLE. Two obelisks of rose-coloured syenite covered with hieroglyphics, each called by this name, have marked a site near the city of Alexandria, Egypt, for nearly 2,000 years. The latest edition of Chambers' admirable *Encyclopædia* asserts that they were originally erected at Heliopolis, whence they were subsequently removed to Alexandria by Rameses II. This statement seems incompatible with the fact that Alexandria was not founded until the year 332 B.C., while Rameses II. died a thousand years previous to that period. How the name came to be applied it is difficult to say, unless, indeed, they had been removed by the Romans from Heliopolis during the reign of the famous Queen of Egypt. Although one of these celebrated monoliths had stood erect on its base for ages, the other had fallen prostrate at some period not clearly stated The latter monument was presented by the Khedive, not long since, to the British Government, and now stands in London on the banks of the Thames. The other was kindly presented to the United States, and is now one of the chief attractions of Central Park in the city of New York.

ANUBIS, an Egyptian deity, styled Anepu on hieroglyphic monuments, the son of Osiris and Nephthys. By the Greeks he was frequently styled Hermes. He is represented on monuments as having the head of a jackal, with pointed ears and snout, which the Greeks frequently changed to those of a dog. Sometimes he is seen wearing a double crown. A white and yellow cock was sacrificed to him. His office, like that of Hermes Psychopompus among the Greeks, was to accompany the ghosts of the deceased into Hades (Amenthes), and there to assist Horus in weighing their actions, under the inspection of Osiris. As in the time of the Romans the Egyptian worship had spread beyond Egypt itself, the two conceptions of Anubis and Hermes were blent together, and the dog's head of the former was found united to the insignia of the latter.

WALL OF ANTONINUS. A barrier erected between the Firths of Forth and Clyde by the Romans, in the reign of Antoninus Pius, to restrain the encroachments of the native tribes. The fragment of a Roman pillar, which was at one time in the University of Edinburgh, fixes the date of its execution as 140 A.D. The superintendence of the work is generally attributed to the imperial legate Lollius Urbicus. Its length was about 27 English miles—the east termination being, according to two different suppositions, at Carriden, or at Kinniel, on the Forth; the west at Old Kilpatrick, or at Douglass Castle, on the Clyde. This great work consisted of a ditch about 20 feet deep and 40 wide, a rampart of earth and stone about 20 feet high and 24 feet thick at the base, and on the inner or south side of the rampart a paved military road. It was protected by a chain of nineteen forts, with watch-towers between. The line of the wall may still be traced to a considerable extent.

CHINA'S GREAT WALL. A world-famous structure is the *Great Wall*—called Wan-li-chang (myriad-mile-wall) by the Chinese—which was built by the first emperor of the Tsin dynasty about 220 B.C., as a protection against the Tartar tribes. It traverses the north boundary of China, extending from 3½ degrees east to 15 degrees west of Pekin, and is carried over the highest hills, through the deepest valleys, across rivers and every other natural obstacle. The length of this great barrier is, according to M'Culloch, 1,250 miles.

ANTINOMIANISM is a doctrine or opinion that Christians are freed from obligation to keep the law of God. It is generally regarded by the advocates of the doctrine of justification by faith as a monstrous abuse and perversion of that doctrine, upon which it usually professes to be based. From several passages of the New Testament, as Romans vi. and 2 Peter ii. 18, 19, it would seem that a tendency to Antinomianism had manifested itself even in the apostolic age; and many of the Gnostic sects were really antinomian, as were probably also some of the heretical sects of the Middle Ages.

THE RAFFLESIA is a remarkable genus of plants belonging to the small natural order *Rafflesiaceæ*, an order composed entirely of parasitic plants, which consist merely of a flower, and form part of the *Rhizogens* of Lindley. The largest and first discovered species, *R. Arnoldi*, was discovered in 1818 in Sumatra by Dr. Arnold, and was sent to the eminent botanist, Robert Brown, by Sir Thomas Stamford Raffles, the British governor in Sumatra. Its flower measures fully three feet in diameter, is capable of containing almost two gallons of fluid, sometimes weighs ten pounds, and is the largest of all known flowers.

AQUA REGIS, literally, royal water, is the common name applied to a mixture of one part of nitric acid and two, three, or four parts of hydrochloric acid. The general proportion is one to two. The name was given to the mixture from the power it possesses of dissolving gold, which is the king of the metals.

THE TWELVE APOSTLES—the twelve whom Jesus sent forth to preach the Gospel. Their names were Simon Peter, Andrew, John (the son of Zebedee), James (his brother), Philip, Bartholomew (called also Nathanael), Thomas, Matthew (surnamed Levi), James (the son of Alphæus), Thaddeus, Simon, and Judas Iscariot. Subsequently Matthias was chosen in the room of Judas; and at a still later period the number of the apostles was further increased by the calling of Paul to the apostleship. The several apostles are usually represented in mediæval pictures with special badges or attributes: St. Peter, with the keys; St. Paul, with a sword; St. Andrew, with a cross; St. James the Less, with a fuller's pole; St. John, with a cup and a winged serpent flying out of it; St. Bartholomew, with a knife; St. Philip, with a long staff, whose upper end is formed into a cross; St. Thomas, with a lance; St. Matthew, with a hatchet; St. Matthias, with a battle-axe; St. James the Greater, with a pilgrim's staff and a gourd-bottle; St. Simon, with a saw; and St. Jude, with a club.

RAILWAYS IN GREECE. It is a remarkable fact that Greece—one of the oldest, most civilised and enlightened countries—has but seven miles of railway in operation, and it was first opened as late as 1869.

NEBUCHADNEZZAR, the greatest of the kings of Babylon, died 561 B.C.

ARCHER FISH, is a name given to certain small East Indian fishes, which have the faculty of projecting drops of water with sure aim at insects, and thereby causing them to fall into the water, where they are instantly seized as prey.

THE TOWER OF BABEL. For an account of this building, and the confusion of tongues which it brought about see the eleventh chapter of Genesis. The distinction of being a remnant of the Tower of Babel has been claimed for three different masses:—(1) For Nimrod's Tower at Akkerkuf; (2) the Mujellibe, 950 yards east of the Euphrates, and five miles above the modern town of Hillah; (3) the Birs Nimrud, to the west of that river, and about six miles to the south west of Hillah, the whole situated in Babylonia. The last of these has the majority of opinions in its favour. Every one, it is said, who has seen the Birs Nimrud feels at once that of the ruined mounds in this region there is not one which so nearly corresponds with his previous notions of the Tower of Babel. It is of an oblong form, the total circumference being 762 yards. The fire-burned bricks of which it is built have inscriptions on them, and so excellent is the cement, which appears to be lime-mortar, that it is nearly impossible to extract a brick whole. The other parts of the summit of this hill are occupied by immense fragments of brickwork, of no determinate figure, tumbled together, and converted into solid vitrified masses, as if they had undergone the action of the fiercest fire, or had been blown up with gunpowder, the layers of brick being perfectly discernible. These ruins stand on a prodigious mound, the whole of which is itself in ruins, channelled by the weather, and strewed with fragments of black stone, sandstone, and marble. The intense vitrifying heat to which the summit has been evidently subjected must have been the result of fire operating from above, and was probably produced by lightning. This is a curious circumstance, taken in connection with the ancient tradition that the Tower of Babel was rent and overthrown by fire from heaven.

BAALBEK, the name of a ruined city in the ancient Cœle-Syria, signifies the "City of Baal," the Sun-god, and was by the Greeks, during the Seleucide dynasty, converted into Heliopolis. It was once the most magnificent of Syrian cities, full of palaces, fountains, and beautiful monuments. It is now only famous for the splendour of its ruins. The most imposing is that of the great Temple of the Sun, 290 feet by 160, having its roof supported by a peristyle of fifty-four Corinthian columns. Of these six are yet standing. The circumference of these columns is about 22 feet, and the length of the shaft 58; with pedestal, capital, and entablature, they measure about 89 feet in height. South from the great temple is a smaller one, known as the Temple of Jupiter. Both temples, as well as the surrounding structures, are built of limestone, in a richly decorated, somewhat fantastic Corinthian style. Beside these there stands a circular building, supported on six granite columns; style, mixed Ionic and Corinthian. It was at one time used as a Christian church.

POLYANDRY, or POLYANDRIA, that form of polygamy which permits a woman to have several husbands. The hot-bed of Polyandry is Tibet. There a wife commonly is the wife of a whole family of brothers—the elder brother being chief husband. In the Himalayan and sub-Himalayan regions adjoining and under the influence of Tibet, it is of frequent occurrence in the same form, as in the valley of Kashmir, in Ladak, among the Koech, among the Telingese. Further south in India we find Polyandry among the Tudas of the Nilgherry Hills, the Coorgs of Mysore, and the Nayars of Malabar. We find it again off the Indian coast in Ceylon. It is found in several parts of Africa; and it occurs again in many parts of America among the red men. We have the authority of Humboldt for its prevalence among the tribes on the Orinoco, and in the same form as in Tibet.

THE BRITISH MUSEUM.—The British Museum, an important national institution in London, originated in a bequest of Sir Hans Sloane, who, during a long lifetime, gathered an extensive, and, at the time, unequalled, collection of objects of natural history and works of art, besides a considerable library of books and manuscripts. These, in terms of his will, were offered, in 1753, to the Government on condition that £20,000 should be paid to his family, the first cost of the whole having amounted to more than £50,000. The offer was accepted; the necessary funds were raised by a lottery, and the collection, with the Harleian and Cottonian libraries, were arranged in Montague House, which had been purchased for £10,250. The new institution, thenceforth called the British Museum, was opened in 1759.

WHERE THE GATE OF TEARS AND THE BRIDGE OF SIGHS ARE, AND WHY SO CALLED.—The Straits of Babelmandeb, the passage from the Persian Gulf into the Red Sea, are called the Gate of Tears by the Arabs. The channel is only about twenty miles wide, rocky and very dangerous for passage in rough weather. It received its melancholy name from the number of shipwrecks that occurred there. The Bridge of Sighs is the bridge in Venice which connects the palace of the Doge with the State prison, and was so called because over it prisoners were conveyed from the judgment hall to the place of execution.

The World's Great Bells.—Russia is in the lead in the line of bells, some of her manufacture being the most famous of the world. It is said that in Moscow alone, before the great fire, there were no fewer than 1,706 large bells. One called the Giant, which was cast in the sixteenth century and broken by falling from its support, and recast in 1654, was so large that it required twenty-four men to ring it; its weight was estimated at 288,000 lbs. It was suspended from an immense beam at the foot of a bell-tower, but it again fell during the fire of June 19th, 1706, and was a second time broken to fragments, which were used with additional materials in 1732 in casting the King of Bells, still to be seen in Moscow. Some falling timbers in the fire of 1737 broke a piece from its side, which has never been replaced. This bell is estimated to weigh 443,732 lbs.; it is 19 feet 3 inches high, and measures around the margin 60 feet 9 inches. Its value in metal alone is estimated to amount to upwards of £60,000. St. Ivan's, also in Moscow, is 40 feet 9 inches in circumference, 16½ inches thick, and weighs 127,830 lbs. The bells of China rank next to those of Russia in size. In Pekin there are seven bells, each of which, according to Father Le Compte, weighs 120,000 lbs. The weight of the leading great bells of the world may be seen in the following:—King of Bells (Moscow), 443,732 lbs.; St. Ivan's (Moscow), 127,830 lbs.; Pekin, 120,000 lbs.; Vienna, 40,200 lbs.; Olmutz (Bohemia), 40,000 lbs.; Rouen (France), 40,000 lbs.; St. Paul's, 38,470 lbs.; "Big Ben" (Westminster), 30,350 lbs.; Montreal, 28,560 lbs.; St. Peter's (Rome), 18,600 lbs.

Table Etiquette for Children.—Here are a few good old rules that can safely be followed:—Give the child a seat that shall be strictly its own. Teach it to take its seat quietly. To use its napkin properly. To wait patiently to be served. To answer promptly. To say "Thank you." If asked to leave the table for a forgotten article, or for any purpose, to do so at once. Never to interrupt and never to contradict. Never to make remarks about the food. Teach the child to keep his plate in order. Not to handle the bread, nor to drop food on the cloth and floor. To always say "Excuse me, please," to the mother when at home, and to the lady or hostess when visiting, if leaving the table before the rest of the party. To fold its napkin and to put back its chair or push it close to the table before leaving. And after leaving the table not to return. Children who observe every one of these rules are well-behaved, delightful companions, and owe it to their mother's careful training.

The Smallest Republic in Europe.—The honour which was claimed for Gersau belongs to the independent hamlet of Foust. This pretty group of huts, situated a few hours distance from Oleron, in the department of the lower Pyrenees, belongs neither to France nor Spain. It has somewhat over a hundred citizens. They have no mayor or other civil official. They have not even an established church or priest of their own, but attend at a neighbouring village.

Divorces in Different Countries.—In Australia divorces have but recently been sanctioned. They are scarcely ever known to occur in modern Greece. In Hindostan either party for a slight cause may leave the other party and marry. In the olden times the Jews had a discretionary power of divorcing their wives. Divorces are scarcely allowed in Tibet, unless with the consent of both parties. Remarriage is forbidden. In Cochin China the parties desiring divorce break a pair of chopsticks in the presence of witnesses, and the thing is done. Two kinds of divorces are granted in Circassia. By the first the parties can immediately marry again; by the second not for a year. Among some tribes of American Indians the sticks given witnesses of the marriage are broken as a sign of divorce. If the wife of a Turkoman asks his permission to go out, and he says "Go," without adding "Come back again," they are divorced. In Siberia if a man is dissatisfied with the most trifling acts of his wife, he tears a cap or veil from her face and that constitutes a divorce. In Siam the first wife may be divorced, but not sold as the others may be. She may claim the first child. The others belong to the husband. Among the Moors, if the wife does not become the mother of a boy, she may be divorced with the consent of the tribe, and can marry again. In the arctic region a man who wants a divorce leaves home in anger and does not return for several days. The wife takes the hint and departs. In China divorces are allowed in all cases of criminality, mutual dislike, jealousy, incompatibility of temperament, or too much loquacity on the part of the wife. Among the Tartars, if the wife is ill-treated she complains to the magistrate, who, attended by the principal people, accompanies her to the house and pronounces a divorce.

Curiosities of Marriage.—Goethe said he married to obtain respectability. Wycherly, in his old age, married his servant girl to spite his relations. The joining of right hands in ancient times had the solemnity and validity of an oath. Giving a ring is supposed to indicate the eternity of the union, seeing that a circle is endless. Under the Roman Empire, marriage was simply a civil contract; hence we read of men "putting away" their wives. Among the Jews the rule was for a maiden to marry on the fourth and a widow on the fifth day of the week—not earlier. In Jewish marriages the woman is set on the right, but throughout Christendom her place in the ceremony is on the left. In a Roman marriage the bride was purchased by the bridegroom's payment of three pieces of copper money to her parents. The custom of putting a veil upon the maid before the betrothal was done to conceal her blushes at the first touch of the man's hand and at the closing kiss. Kissing the bride the moment the marriage ceremony ended, though not now prescribed by the rubric of the western churches, formerly was an imperative act on the part of the bridegroom. The early marriage ceremony among the Anglo-Saxons consisted merely of hand-fastening, or taking each other by the hand, and pledging each other love and affection in the presence of friends and relatives. An old adage thus lays down the proper days for wedlock:—

> "Monday for wealth, Tuesday for health, Wednesday the best day of all;
> Thursday for crosses, Friday for losses, Saturday no luck at all."

The Various Names of Satan Used in the Bible.—The Greek word *diabolos* is the one we derive the popular name of the devil from, and its meaning is "slanderer."

It corresponds to the Hebrew "Satan," which signifies "adversary," as that being or power is understood to be the adversary of God or man, the foe of goodness and the author of evil. The references to Satan in the Scriptures are numerous, but this name only appears five times in the Old Testament and twenty five times in the New Testament. The word "devil" occurs twenty-five times; "the prince of this world" three times; "the wicked one" six times; "the tempter" twice; and, in Rev. xii. 9, "old serpent," "the devil," and "Satan" occur, a most remarkable grouping of epithets, as, also, in Rev. xx. 1, 2, and 3, the names, "evil one," "god of this world," "prince or the power of the air," the "dragon" going about "like a roaring lion," occur, and the Master Himself describes him as a "murderer and a liar." He is a "strong man" (Matt. xii. 29), and his subtlety (Gen. iii. 1) is exhibited in treacherous snares (2 Tim. ii. 26), wiles (Eph. vi. 11), and devices (2 Cor. ii. 11), and the delusive shift of transforming himself into an angel of light (2 Cor. xi. 14). He became an apostate (John viii. 44), and fell from heaven (Luke x. 18, and Jude 6), and from his place of power he will eventually be overthrown (Rev. xx. 1, 2, 3, and 10). The name of Beelzebub was also in common use among the Jews in the time of Christ, as a title of Satan, or "the prince of the demons."

How the Twelve Apostles Died.—According to the generally received traditions of the Church, Andrew suffered martyrdom at Patræ, in Achaia, on a cross of the form known as St. Andrew's cross; Bartholomew was crucified at Albanopolis, in Armenia; James, the elder, son of Zebedee, was beheaded; James, the brother of our Lord, was probably stoned to death; Matthew died a natural death; Philip died a violent death at Hiorapolis, but by what mode is uncertain; Simon Peter was crucified at Rome; Thaddeus, or Jude, probably suffered martyrdom in Persia; John, the beloved disciple, lived, according to Jerome, to be about one hundred years old, and died at Ephesus; Simon Zelotes was crucified at 129 years of age; Thomas was put to death in India, and Judas Iscariot hung himself.

How Waste Time Has Been Utilised.—Baxter wrote his "Saint's Everlasting Rest" on a bed of sickness (1615-91). Bloomfield composed "The Farmer's Boy" in the intervals of shoemaking (1766-1823). Bramah (Joseph), a peasant's son, occupied his spare time, when a mere boy, in making musical instruments, aided by the village blacksmith. At the age of sixteen he hurt his ankle while ploughing, and employed his time, while confined to the house, in carving and making woodwares. In another forced leisure from a severe fall he employed his time in contriving and making useful inventions, which ultimately led him to fame and fortune (1749-1814). Bunyan wrote his "Pilgrim's Progress" while confined in Bedford jail (1628-1688). Burritt (Elihu) made himself acquainted with ten languages while plying his trade as a village blacksmith (Hebrew, Greek, Syriac, Spanish, Bohemian, Polish, Danish, Persian, Turkish, and Ethiopic). His father was a village cobbler, and Elihu had only six months' education, and that at the school of his brother (1811-1879). Carey, the missionary and Oriental translator, learned the rudiments of Eastern languages while employed in making and mending shoes (1761-1834). Clement (Joseph), son of a poor weaver, was brought up as a thatcher, but, by utilising his waste moments in self-education and works of skill, raised himself to a position of great note, giving employment to thirty workmen (1779-1844). Cobbett learned grammar in the waste time of his service as a common soldier (1762-1835). D'Aguesseau, the great French chancellor, observing that Mde. D'Aguesseau always delayed ten or twelve minutes before she came down to dinner, began and completed a learned book of three volumes (large quarto) solely during these "waste minutes." This work went through several editions (1668-1751). Etty utilised indefatigably every spare moment he could pick up when a journeyman printer (1787-1849). Ferguson taught himself astronomy while tending sheep in the service of a Scotch farmer (1710-1776). Franklin, while working as a journeyman printer, produced his "Dissertation on Liberty and Necessity, Pleasure and Pain" (1706-1790). Miller (Hugh) taught himself geology while working as a mason (1802-1856). Paul worked as a tentmaker in intervals of travel and preaching.

Origin of the Saying, "The Rolling Stone Gathers No Moss."—

The stone that is rolling can gather no moss;
For master and servant oft changing is loss.
—T. Tusser, "The Points of Huswifery."
("Admonitions," 1560.)

Origin of the Saying, "When in Rome Do as the Romans Do."—It originated with St. Ambrose (fourth century) from the following diversity in the observance of Saturday: The Milanese make it a feast, the Romans a fast. St. Ambrose being asked what should be done in such a case, replied, "In matters of indifference, it is better to be guided by the general usage. When I am at Milan I do not fast on Saturdays, but when I am at Rome I do as they do at Rome."

Persons Most Noted for Their Memory Are—Magliabechi, of Florence, called "The Universal Index and Living Cyclopædia" (1633-1714). P. J. Beronicius, the Greek and Latin improvisator, who knew by heart Horace, Virgil, Cicero, Juvenal, both the Plinys, Homer, and Aristophanes. He died at Middleburgh, in 1676. Andrew Fuller, after hearing five hundred lines twice, could repeat them without a mistake. He could also repeat verbatim a sermon or speech; could tell either backwards or forwards every shop sign from the Temple to the extreme end of Cheapside, and the articles displayed in each of the shops. Woodfall could carry in his head a debate, and repeat it a fortnight afterwards. Thompson could repeat the names, trades, and particulars of every shop from Ludgate Hill to Piccadilly. William Radcliff, the husband of the novelist, could repeat a debate the next morning.

The Largest Nuggets Ever Found.—1. The Sarah Sands nugget, found at Ballarat. It weighed 130 lbs. troy or 1,560 oz. 2. The Blanche Barkly nugget, dug up at Kingower. It weighed 145 lbs. 3. The Welcome nugget, found at Ballarat. It weighed 184 lbs. This was the largest ever found. The first nugget was discovered in New South Wales, in 1851; the next in Victoria, in 1852. The former of these two weighed a hundredweight, and was purchased of a shepherd.

Ancient Clocks.—Clocks, called water-clocks, first used in Rome, 158 before Christ; clocks and dials first set up in churches, 913; clocks made to strike by the Arabians, 801; by the Italians, 1300; a striking clock in Westminster, 1368; the first portable one made, 1530; none in England that went tolerably, till that dated 1540, maker's name N. O. now at Hampton Court Palace; clocks with pendulums, etc., invented by one Fromantil, a Dutchman, about 1556; repeating clocks and watches invented by one Barlow, 1676. Till about 1631, neither clocks nor watches were general.

Dying Sayings of Famous People.—Addison: "See how a Christian dies!" or, "See in what peace a Christian can die!" Anaxagoras: "Give the boys a holiday." | Arria: "My Pætus, it is not painful." † Augustus: "Vos Plaudite" (after asking how he had acted his part in life.)—Cicero. Beaufort (Cardinal Henry): "I pray you all, pray for me." Berry (Mde. de): "Is not this dying with courage and true greatness?" Brontë (father of the authoress): "While there is life there is will." (He died standing.) ‡ Byron: "I must sleep now." § Cæsar (Julius): "Et tu, Brute!" (To Brutus, when he stabbed him.) * Charlemagne: "Lord, into Thy hands I commend my spirit!" Charles I. (of England): "Remember." (To William Juxon, Archbishop of Canterbury.) Charles II. (of England): "Don't let poor Nelly starve." (Nell Gwynne.) Charles V.: "Ah, Jesus!" Charles IX. (of France): "Nurse, nurse, what murder! what blood! Oh, I have done wrong. God pardon me." Charlotte (the princess): "You make me drink. Pray, leave me quiet. I find it affects my head." Chesterfield: "Give Day Rolles a chair." * Columbus: "Lord, into Thy hands I commend my spirit!" Crome (John): "Oh, Hobbima, Hobbima, how I do love thee!" Cromwell: "My desire is to make what haste I may to be gone." † Demonax (the philosopher): "You may go home; the show is over."—Lucian. Eldon (Lord): "It matters not where I am going, whether the weather be cold or hot." Fontenelle: "I suffer nothing, but feel a sort of difficulty in living longer." Franklin: "A dying man can do nothing easy." Gainsborough: "We are all going to heaven, and Vandyck is of the company." George IV.: "Whatty, what is this? It is death, my boy. They have deceived me." (Said to his page, Sir Walthen Waller.) Gibbon: "Mon Dieu; Mon Dieu!" ¶ Goethe: "More light!" Gregory VII.: "I have loved justice and hated iniquity, therefore I die in exile." * Grey (Lady Jane): "Lord, into Thy hands I commend my spirit!" Grotius: "Be serious." Haydn: "God preserve the emperor." Haller: "The artery ceases to beat." Hazlitt: I have led a happy life." Hobbes: "Now I am about to take my last voyage—a great leap in the dark." || Hunter (Dr. William): "If I had strength to hold a pen, I would write down how easy and pleasant a thing it is to die." Irving: "If I die I die unto the Lord. Amen." James V. (of Scotland): "It came with a lass and will go with a lass" (*i.e.*, the Scotch crown). Jefferson (of America): "I resign my spirit to God, my daughter to my country." Jesus Christ: "It is finished." Johnson (Dr.): "God bless you, my Dear!" (To Miss Morris.) Knox: "Now it is come." Louis I.: "Huz! huz!" (Bouquet says, "He turned his face to the wall, and twice cried, 'Huz! Huz!' (out, out) and then died.") Louis IX.: "I will enter now into the house of the Lord." || Louis XIV.: "Why weep ye? Did you think I should live for ever?" Then, after a pause, "I thought dying had been harder." ‡ Louis XVIII.: "A king should die standing." Mahomet: "Oh, Allah, be it so! Henceforth among the glorious host of Paradise." Margaret (of Scotland, wife of Louis XI. of France): "Fi de la vie! Qu'on ne m'en parle plus." Marie Antoinette: "Farewell, my children, for ever. I go to your father." § Masaniello: "Ungrateful traitors!" (Said to the assassins.) Mathews (Charles): "I am ready." Mirabeau: "Let me die to the sounds of delicious music." Moody (the actor):—

"Reason thus with life,
If I do lose thee, I do lose a thing
That none but fools would keep."
Shakespeare.

Moore (Sir John): "I hope my country will do me justice." Napoleon I.: "Mon Dieu! La nation Française! Fête d'armée?" Napoleon III.: "Were you at Sedan?" (To Dr. Conneau.) Nelson: "I thank God I have done my duty." Nero: "Qualis artifex pereo." Palmer (the actor): "There is another and a better country." (This he said on the stage, it being a line in the part he was acting, the play being from *The Stranger.*) Pitt (William): "Oh, my country, how I love thee!" Pizarro: "Jesu!" Pope: "Friendship itself is but a part of virtue." † Rabelais: "Let down the curtain, the farce is over." Sand (George): "Laissez la verdure." (Meaning "Leave the tomb green, do not cover it over with bricks or stone." George Sand was Mde. Dudevant.) Schiller: "Many things are growing plain and clear to my understanding." Scott (Sir Walter): "God bless you all!" (To his family.) Sidney (Algernon): "I know that my Redeemer liveth. I die for the good old cause." Socrates: "Crito, we owe a cock to Æsculapius." Stael (Mde. de): "I have loved God, my father, and liberty." ¶ Talma: "The worst is, I cannot see." * Tasso: "Lord, into Thy hands I commend my spirit!" Thurlow (Lord): "I'll be shot if I don't believe I'm dying." ‡ Vespasian: "A king should die standing." William III (of England): "Can this last long?" (To his physician.) William of Nassau: "Oh, God, have mercy upon me, and upon this poor nation!" (This was said as he was shot by Balthasar Gerard, 1584.) Wolfe (General): "What! do they run already? Then I die happy." Wyatt (Thomas): "That which I then said I unsay. That which I now say is true." (This to the priest who reminded him that he had accused the princess Elizabeth of treason to the Council, and that he now alleged her to be innocent.

Those names preceded by similar pilcrows indicate that the "dying words" ascribed to them are identical or nearly so. Thus, the * before Charlemagne, Columbus, Lady Jane Grey, shows that their words are alike. So with the † before Augustus, Demonax, and Rabelais; the ‡ before Louis XVIII. and Vespasian; the § before Cæsar and Masaniello; the |. before Arria, Hunter, and Louis XIV.; and the ¶ before Goethe and Talma.

Remarkable Rain Storms.—A continual rain in Scotland for five months, 918; a violent one in London, 1222; again, 1233; so violent, the harvest did not begin until Michaelmas, 1330; so heavy that the corn was spoiled, 1335; from the beginning of October to December, 1338; from Midsummer to Christmas, so that there was not one day or night dry together, 1348; in Wales, which destroyed 10,000 sheep, September 19th, 1752; in Languedoc, which destroyed the village of Bar le Duc, April 26th, 1776; in the island of Cuba, June 21st, 1791, when 3,000 persons and 11,700 cattle of various kinds perished by the torrents occasioned by the rain.

Historic Plagues.—The whole world visited by a plague, 767 before Christ; in Rome, when 10,000 persons died in a day, 78; in England, 762; in Chichester, when 34,000 died, 772; in Canterbury, 788; in Scotland, which swept away 40,000 inhabitants, 954; in England 1025, 1247, and 1347; in England, when 50,000 died in London, 1500; in Germany, which cut off 90,000 people, 1348; in Paris and London, very dreadful, 1367; again, 1379; in London, which killed 30,000 persons, 1407; again, when more were destroyed than in fifteen years, war before, 1477; again, when 30,000 died in London, 1499; again, 1548 and 1594; which carried off in London a fourth part of its inhabitants, 1604; at Constantinople, when 200,000 persons died, 1611; at London, when 35,417 died, 1625 and 1631; at Lyons, France, 60,000 died, 1632; again, at London which destroyed 68,000 persons in 1665; at Messina, February, 1743; at Algiers, 1755; in Persia, when 80,000 persons perished at Passorah, 1773; at Smyrna, that carried off about 20,000 inhabitants, 1784; and at Tunis, 32,000, 1784; in the Levant, 1786; at Alexandria, Smyrna, etc., 1791; in Egypt in 1792, where near 800,000 died; the yellow fever destroyed 2,000 at Philadelphia in 1793; on the coast of Africa, particularly at Barbary, 3,000 died daily; at Fez, 247,000 died in June 1799; 1,800 died at Morocco in 1800, in one day.

Eclipses.—The most remarkable eclipses of the sun observed at Sardis, and predicted by Thales, 585 before Christ. At Athens, 424 before Christ. At Rome, caused a total darkness at noonday, A.D. 291. At Constantinople, 968. In France, June 29th, 1033, dark at noonday. In England, March 21st, 1140, occasioned a total darkness. Another on June 22nd, 1191, entire darkness and the stars very visible at ten in the morning. In the same year, the true sun, and the appearance of another, so that astronomers alone could distinguish the difference by their glasses. Another in 1331. A total eclipse of the sun in England, when the darkness was so great that the stars faintly appeared, and the birds went to roost in the morning about ten, April 22nd, 1715.

Jews.—The seventy years captivity of the Jews began 606 before Christ; they about Cyrene, headed by one Andree, murdered nearly 100,000 Greeks and Romans; they ate their entrails, and covered themselves with the skins of those they assassinated, 115 after Christ; above 580,000 destroyed by the Romans, 135; first arrived in England, 1079; every Jew, who lent money on usury, was commanded to wear a plate upon his breast, signifying that he was an usurer, or quit the realm, 1274; 267 were hanged and quartered for clipping, 1277; the same year the Jews crucified a child at Northampton, for which fifty were drawn on horses' tails and hanged; all the synagogues were ordered to be destroyed, 1282; all the Jews in England were apprehended in one day, their goods and chattels confiscated to the king, and they, to the number of 15,660 banished the realm, having only sustenance money allowed, 1287; they remained banished 364 years, till Oliver Cromwell restored them; a general massacre of them at Verdun by the peasants, who, from a pretended prophecy, conceived the Holy Land was to be recovered from the infidels by them; 500 of these Jews took shelter in a castle, and defended themselves to the last extremity, when, for want of weapons, they threw their children at the enemy, and then killed each other 1317; driven out of France, 1394; driven out of Spain to the number of 150,000, 1492; they retired to Africa, Portugal, and France. It was against them that the inquisition was there first established. There was not a Jew in this island from 1610 to 1624. Act passed to naturalise them, 1753, but repealed on the petition of all the cities in England in 1754.

Remarkable Revolutions in Ancient History.—The Assyrian Empire destroyed, and that of the Medes and Persians founded by Cyrus the Great, 546 before Christ. The Macedonian Empire founded on the destruction of the Persian, on the defeat of Darius Codomannus, by Alexander the Great, 331 before Christ. The Roman Empire established on the ruins of the Macedonian or Greek Monarchy, by Julius Cæsar, 47 before Christ. The Eastern Empire, founded by Constantine the Great, on the final overthrow of the Romans, A.D. 306. The empire of the Western Franks began under Charlemagne, A.D. 802. This empire underwent a new revolution, and became the German Empire, under Rodolph of Augsburg, the head of the house of Austria, A.D. 1273, from which it is also called the Monarchy of the Austrians. The Eastern Empire passed into hands of the Turks, A.D 1300. In England in 1688. Poland in 1704, 1709, and 1795. Turkey in 1730. Persia in 1748 and 1753 Russia in 1682, 1740, and 1762. Sweden in 1772. North America in 1776. France in 1789. Venice took place May 17th, 1797. Rome, February 26th, 1798.

How to Mix Inks or Paints for Tints.—A larger quantity of the first-named colour must always be used —Dark green and purple make bottle green. White and medium yellow make buff tint. Red, black, and blue make dark brown. Bronze blue, lemon yellow, and black make dark green. White, medium yellow, and black make drab tint. White, lake, and lemon yellow make flesh tint. Lemon yellow and bronze blue make grass green. White and black make gray tint. White and purple make lavender tint. Red, black, and medium yellow make maroon. Lake and purple make magenta Medium yellow and purple make olive green. Medium yellow and red make orange. White, ultramarine blue, and black make pearl tint. White and lake make pink. Ultramarine blue and lake make purple. Orange, lake, and purple make russet. Medium yellow, red, and white make sienna. White and ultramarine blue make sky blue. Ultramarine blue, black, and white make slate. Vermilion and black make Turkey red. White, yellow, red, and black make umber.

Tributes to the Fair Sex.—Confucius, "Woman is the masterpiece." Herder, "Woman is the crown of creation." Voltaire, "Women teach us repose, civility, and dignity." John Quincy Adams, "All that I am my mother made me." Ruskin, "Shakespeare has no heroes

—he has only heroines." Whittier, "If woman lost us Eden, such as she alone can restore it." Bulwer, "To a gentleman every woman is a lady in right of her sex." Lamartine, "There is a woman at the beginning of all great things." E. S. Barrett, "Woman is last at the cross and earliest at the grave." Gladstone, "Woman is the most perfect when the most womanly." Sandi, "A handsome woman is a jewel; a good woman is a treasure." Richter, "No man can either live piously or die righteous without a wife." N. P. Willis, "The sweetest thing in life is the unclouded welcome of a wife." Heine, "Handsome women without religion are like flowers without perfume." Beecher, "Women are a new race, recreated since the world received Christianity." Voltaire, "All the reasonings of a man are not worth one sentiment of a woman." Leopold Schefer, "But one thing on earth is better than a wife—that is a mother." Michelet, "Woman is the Sunday of man; not his repose only, but his joy, the salt of his life." Luther, "Earth has nothing more tender than a woman's heart when it is the abode of pity." Shakespeare, "For where is any author in the world teaches such beauty as a woman's eyes?" Margaret Fuller Ossoli, "Woman is born for love, and it is impossible to turn her from seeking it." Louis Desnoyers, "A woman may be ugly, ill shaped, wicked, ignorant, silly, and stupid, but hardly ever ridiculous."

The Principal Forms of Salutation Among Use in the Various Nations of the Earth.—The custom of shaking hands is the most common among civilised nations. It undoubtedly comes from remote barbarism, when two men meeting gave each other their weapon hands, as a security against treachery or sudden attack. On the European continent it is usual for men who are intimate friends to kiss one another, but this custom prevails only among ladies in Great Britain and America. In the greater portion of Germany it is an act of politeness to kiss the hand of a lady; but this privilege is allowed in Italy only to near relatives, while in Russia it is extended to kissing the forehead. In the East and among the Slavic nations the character of salutations is quite different. The custom of throwing one's self upon the ground and kissing the feet of the monarch prevails among the Persians. In China an inferior upon horseback meeting a superior dismounts and waits till the latter has passed. In Japan the inferior removes his sandals when meeting his superior, crosses his hands by placing the right hand in the left sleeve, and with a slow rocking motion of his body, cries out, "Augh! Augh!" Do not hurt me.) In Siam the inferior throws himself upon the ground before his superior, the latter sends forward one of his slaves to see whether the former has been eating anything, or carries with him any smell at all offensive. If he does, he is immediately kicked out without ceremony, but if not, the attendant raises him up. In Ceylon the inferior on meeting a superior throws himself upon the ground, repeating the name and dignity of the latter, who appears to take little notice of the prostrate form as he passes it. Among some tribes of the American Indian the custom is to salute by rubbing noses together. This form is also common in the Friendly and Society Islands, where it is returned by each taking the hand of the other and rubbing it upon his own nose and mouth. The Moors of Morocco ride at full speed towards a stranger, as if they intended to run him down, and on arriving near, suddenly stop and fire a pistol over his head. In the Pelew Islands the inhabitants grasp either the hand or foot of the one they wish to salute, and rub their face against it. The Arabians shake hands six or eight times, but if persons of distinction, they embrace and kiss several times, also kissing their own hand. Yemen persons of rank permit their fingers to be kissed, after a long refusal. In Turkey it is the custom to place the hands upon the breast, and bow to the person saluted. They are perhaps the most affectionate in Burmah—fancy the following: A gentleman meets a lady or another gentleman and applies his mouth and nose closely to their cheek and draws in the breath strongly, as if smelling a delightful perfume, with both mouth and nose. Hence, instead of saying, "Give me a kiss!" a Burmahan would say, "Give me a smell!"

Origin of Vegetation.—Spinach is a Persian plant. Horseradish is a native of England. Melons were found originally in Asia. Filberts originally came from Greece. Quinces originally came from Corinth. The turnip originally came from Rome. The peach originally came from Persia. Sage is a native of the south of Europe. Sweet marjoram is a native of Portugal. The bean is said to be a native of Egypt. Damsons originally came from Damascus. The nasturtium came originally from Peru. The pea is a native of the south of Europe. Ginger is a native of the East and West Indies. The gooseberry is indigenous to Great Britain. Coriander seed came originally from the East. Apricots are indigenous to the plains of America. The cucumber was originally a tropical vegetable. The walnut is a native of Persia, the Caucasus, and China. Capers originally grew wild in Greece and Northern Africa. Pears were originally brought from the East by the Romans. The clove is a native of the Malacca Islands, as is also the nutmeg. Cherries were known in Asia as far back as the seventeenth century. Garlic came to us first from Sicily and the shores of the Mediterranean. Asparagus was originally a wild sea-coast plant, and is a native of Great Britain. The tomato is a native of South America, and it takes its name from a Portuguese word. Parsley is said to have come from Egypt, and mythology tells us it was used to adorn the head of Hercules. Apples were originally brought from the East by the Romans. The crab apple is indigenous to Great Britain. The onion was almost an object of worship with the Egyptians two thousand years before the Christian era. It first came from India. Cloves came to us from the Indies, and take their name from the Latin *clauvis*, meaning a nail, to which they have a resemblance. The cantaloupe is a native of America, and so called from the name of a place near Rome, where it was first cultivated in Europe. Lemons were used by the Romans to keep moths from their garments, and in the time of Pliny they were considered an excellent poison. They are natives of Asia.

How Sound Travels.—In dry air at 82 degrees, 1,142 feet per second, or about 775 miles per hour; in water, 4,900 feet per second; in iron, 17,500 feet; in copper, 10,378 feet; and in wood from 12,000 to 16,000 feet per second. In water, a bell heard at 45,000 feet could be heard in the air out of the water but 656 feet. In a balloon the barking of dogs can be heard on the ground at an elevation of 4 miles. Divers on the wreck of the *Hussar* frigate, 100 feet under water, at Hell Gate near New York, heard the paddle-wheels of distant steamers hours before they hove in sight. The report of a rifle on a still day may be heard at 5,300 yards; a military band at 5,200 yards. The fire of the English on landing in Egypt was distinctly heard 130 miles.

Digestion.—Average time required for the digestion of various articles of food:

	Hrs.	M.		Hrs.	M.
Apples, sweet (boiled)	2	30	Milk (raw)	2	15
Barley (boiled)	2		Milk (boiled)	2	
Beans, Lima (boiled)	2	30	Mutton (boiled)	3	
Beef (roasted)	3		Mutton (roast)	3	15
Beef (fried)	4		Oysters (roast)	3	15
Beef, salt (boiled)	2	45	Oysters (stewed)	3	30
Bread	3	30	Pigs' feet, soused (boiled)	1	
Butter	3	30	Potatoes (baked)	2	30
Cheese	3	30	Pork, salt (stewed)	3	
Chicken (fricasseed)	2	40	Pork (roast)	3	15
Custard (baked)	2	45	Rice (boiled)	1	
Duck (roasted)	4		Sago (boiled)	1	45
Eggs (raw)			Soup, barley	1	30
Eggs (soft boiled)	3		Soup, chicken, etc. (average)	3	15
Eggs (hard boiled)	3	30	Tripe, soused (boiled)	1	
Eggs (fried)	3	30	Turkey (roast)	2	20
Fish	2	45	Veal (boiled)	4	
Fowl (roast)	4		Veal (fried)	4	30
Hashed meat and vegetables	2	30			
Lamb (boiled)	2	30			

Fat, Water, and Muscle Properties of Food.—

100 parts.	Water.	Muscle.	Fat.
Cucumbers	97·0	1·5	1·0
Turnips	94·4	1·1	4·0
Cabbage	90·0	4·0	5·0
Milk, Cows	86·0	5·0	8·0
Apples	84·0	5·0	10·0
Eggs, Yolk of	79·0	15·0	27·0
Potatoes	75·2	1·4	22·5
Veal	68·5	10·1	16·5
Eggs, White of	53·0	17·0	·0
Lamb	50·5	11·0	35·0
Beef	50·0	15·0	30·0
Chicken	46·0	18·0	32·0
Mutton	44·0	12·5	40·0
Pork	38·5	10·0	50·0
Beans	14·8	24·0	57·0
Buckwheat	14·2	8·6	75·4
Barley	14·0	15·0	68·8
Corn	14·0	12·0	73·0
Peas	14·0	23·4	60·0
Wheat	14·0	14·6	69·4
Oats	13·6	17·0	66·4
Rice	13·5	6·5	79·5
Cheese	10·0	65·0	19·0
Butter			100·0

How to Keep Fresh Meat a Week or Two in Summer.—Farmers or others living at a distance from butchers can keep fresh meat very nicely for a week or two, by putting it into sour milk or butter-milk, placing it in a cool cellar. The bone or fat need not be removed. Rinse well when used.

The Philosophy of Some Things.—*Why some Beverages Froth or Sparkle when Uncorked.* When liquors are bottled they contain a certain amount of sugar, which ferments through the action of minute spores or cells; these break the sugar up into alcohol and carbonic acid gas. When the cork is withdrawn the gas instantly makes its escape, and, rising in bubbles, produces effervescence and froth.—*Comparative Size of the Sun and Earth.* If the sun were hollow like an air-ball it would take 1,331,000 globes the size of our earth to fill it.—*How Rocks are Cut by Water.* The Falls of Niagara eat back the cliff at the rate of about one foot a year. In this way a deep cleft has been cut right back from Queenstown, for a distance of seven miles, to the place where the falls now are. At this rate it has taken more than thirty-five thousand years for that channel of seven miles to be made.—*Why a Tallow Candle Fired from a Gun will Pierce a Board.* When a candle starts from the breech of a gun its motion is gradually increased until it leaves the muzzle at a high velocity, and when it reaches the board every particle of matter composing it is in a state of intense velocity. At the moment of contact the particles of matter composing the target are at rest, and as the density of the candle, multiplied by the velocity of its motion, is greater than the density of the target at rest, the greater force overcomes the weaker, and the candle breaks through and pierces a hole in the board.—*Why a River always Appears more Shallow than it really is.* Because the light proceeding from the bottom of the river is refracted as it emerges out of the water. A river is about one-third deeper than it seems to be. If, therefore, a river seems only 4½ feeet deep, it is actually 6 feet deep. Many persons get out of their depth in bathing in consequence of this deception.—*Why a Small Needle carefully laid upon the Surface of Water will Float.* Its weight is not sufficient to overcome the cohesion of the particles of water constituting the surface, consequently it cannot pass through them and sink. For the same reason many light insects walk upon the surface of water without sinking or becoming wet.—*Why a Railway Train makes more Noise when it Passes over a Bridge than when on Solid Ground.* The bridge is elastic and vibrates much more from the weight of the train than the solid earth, in consequence of which it produces more definite sound-waves. The bridge acts as a sounding-board, and the water or earth below it repeats or echoes the sound.—*Why a Soap Bubble Exhibits such a Variety of Colours.* Because the thickness of the film through which the rays pass is constantly varying.—*Why Water Expands when it Freezes.* Ice is, in reality, crystallised water, and during its formation the particles arrange themselves in ranks and lines, which cross each other at angles of 60 and 120 degrees, and consequently occupy more space than when liquid. Cast-iron bomb-shells 13 inches in diameter and 2 inches thick, were filled with water and their apertures or fuse-holes firmly plugged with iron bolts. Upon exposure to a temperature of 19 degrees below zero, at the moment the water froze, the shells burst asunder, demonstrating the enormous interior pressure to which they were subjected by the water assuming its solid shape.—*Why Oil and Water will not Unite.* Because there is no affinity between the oil and the water. Affinity is the peculiar disposition which one body has to unite with a different body to the rejection of others which are dissimilar in their properties. In the case of the oil and water, the repulsion is overcome if we add a little potash, the three uniting to form soap.—*Why Waves are Calmed by pouring Oil upon the Water.* Oil, from its inferior specific gravity, forms a floating film, which defends the surface of the water from contact with the currents of air, and the friction between the wind and the waves is greatly diminished in the same manner that the friction between solids is by the application of oils.—*Why the Fur of a Cat Crackles when Rubbed with the Hand in Cold Weather.* Because the friction between the hand and the fur produces an excitation of positive electricity in the hand and negative in the fur, and an interchange of the two causes a spark with a slight noise. It is miniature thunder and lightning.—*Why Hot Iron makes a Hissing Noise when Plunged into Water.* The hot iron converts into steam the particles of water which come in contact with it, and as the steam flies upward it passes by other particles of water not yet evaporated; the collision produces very rapid vibrations in the air, and a hissing noise is the result.—*How we can Demonstrate that Ice has Heat.* By friction two pieces of ice can be quickly melted, in a room cooled below the freezing point, by rubbing them against each other.—*Why in Travelling we Experience less Dust in the Night-time than during the Day.* Because the dews of night moisten the dust and prevent its rising into the air, and as the surface of the earth is colder than the air after sunset, the currents of the wind will incline downward and tend rather to press the dust down than to buoy it up.—*Why Wood and Coal Snap when laid upon the Fire.* Because the air or liquid contained in the pores becomes expanded by heat and bursts the covering in which it is confined.—*Why two or more Echoes are sometimes Heard.* Because separate reverberating surfaces receive the sound and reflect in succession. At Glasgow is a remarkable echo. If a trumpeter plays a tune and stops, the echo will begin the same tune and repeat it all accurately; as soon as this echo has ceased another will echo the same tune in lower tone; and after the second echo has ceased, a third will succeed with equal fidelity, though in a much feebler tone. At the Lakes of Killarney there is an echo which plays an excellent "second" to any simple tune played on a bugle.—*Why Plaster of Paris Hardens when Moistened with Water.* Plaster of Paris (calcined plaster), so called because immense beds of it are found in the vicinity of Paris, in which city it was first extensively used as a plaster or cement, is pulverised rock. After being pulverised, it is strongly heated, until it loses one-fifth of its weight, by the expulsion of moisture from its composition. When mixed with water, the anhydrous burnt gypsum again chemically combines with it and passes into a solid state.—*How Knowledge of the Velocity of Sound is made Applicable to the Measurement of Distances.* Suppose a flash of lightning be perceived, and on counting the seconds that elapse before the report of thunder is heard, we find them to amount to $3\frac{1}{2}$; then, as sound moves 1,142 feet in a second, it will follow that the thunder-cloud must be distant, $1{,}142 \times 3\frac{1}{2} = 3{,}997$ feet.

Some Good Maxims.—There is nothing better in heaven than religion. Our actions of to-day are the thoughts of yesterday. A truthful woman is the greatest adornment of a home. If you live in impure thoughts you will be impure in your lives. Profanity is more or less a profession of your loyalty to the devil. Nobody ever went to sleep indifferent to religion and waked up in heaven. A child is loved by God because it has no opinions and wants to learn something. Don't get into anybody's ways with your naturalness, but try to be yourself wherever you go. Run into heaven bareheaded and barefooted rather than miss it on account of anything in the world.

Hairs—Number on a Head.—A German physiologist who counted the hairs on different human heads, states that, taking four heads of hair of equal weight, the number of hairs, according to colour, was as follows:—Red, 90,000; black, 103,000; brown, 109,000; blonde, 140,000. Dark brown hair is by far the most common in this country. It has been found that, out of a given number of English people, 30 have red hair, 67 black hair, 108 fair hair, 338 light brown hair, and 807 dark brown hair.

Human Hair.—On the scalp of a man twenty-five years of age, 744 hair-pores have been counted in a square inch. Flaxen hair is much more abundant than that of darker shades. Hairs vary very greatly on the different parts of the body, both as to length and size, from the finest *lanugo*, or short downy hair of the face, to the long hair of women. Dr. Erasmus Wilson mentions a lady whose longest hairs measured seventy-five inches. The beard has also been known to attain great length; and the story is told, on good authority, of a carpenter whose beard measured nine feet in length.

Size of Hairs.—The size or diameter of the hair is by no means uniform. Few, if any, hairs are round. Dr. Erasmus Wilson measured a large number of hairs, and found the diameters to vary from $\frac{5}{1500}$ to $\frac{1}{140}$ of an inch. The common diameter of the average hair is about $\frac{1}{450}$ of an inch; that is, 450 laid side by side would form a band an inch wide. Darker hair is more apt to be coarse than that which is lighter, though black hair is sometimes exceedingly fine and silky. The coarsest hair is found in females and the finest in males; and in children the diameter of the air is still finer.

Pores of the Skin.—These glands are very numerous in some parts, on the sole of the foot and palm of the hand, there being about 2,700 in each square inch, while on the cheeks there are about 550 in the same space, and on the forehead about 1,250. According to careful computation the total number in the body amounts to almost 2,400,000, and as each little gland when its coil is unravelled would measure about 1-15th of an inch, their entire length amounts to not less than 153,000 inches, or about two and a half miles.

Number of British Slaves Freed in 1833.—The total number of slaves set free in the British colonies by the Emancipation Act of 1833 was 780,993, divided as follows:—Jamaica, 311,700; Barbadoes, 83,000; Antigua, etc., 172,093; Guiana, 84,900; Mauritius, 68,600; Trinidad, 22,300; Cape of Good Hope, 38,400. The total indemnity paid to owners was twenty millions sterling, being about £26 for each slave. How much better a result this was than such a war and terrible financial loss as the Civil War in the United States was we leave our reader to say.

THE BIGGEST THINGS.—*Interesting Facts useful when you get into an Argument.*—The largest theatre in the world is the Opera-house in Paris. It covers nearly three acres of ground; its cubic mass is 4,287,000 feet; it cost about 100,000,000 francs.—The largest suspension bridge is the one between New York City and Brooklyn: the length of the main span is 1,595 feet 6 inches; the entire length of the bridge is 5,980 feet.—The loftiest active volcano is Popocatapetl—"smoking mountain"—thirty-five miles south-west of Puebla, Mexico; it is 17,748 feet above the sea level, and has a crater three miles in circumference, and 1,000 feet deep.—The longest span of wire in the world is used for a telelgraph in India over the river Kistnah. It is more than 6,000 feet in length, and is 1,200 feet high.—The largest ship in the world is the *Great Eastern.* She is 630 feet long, 83 feet broad, and 60 feet deep, being 28,627 tons burden, 18,915 gross, and 13,334 net register.—The greatest fortress, from a strategical point of view, is the famous stronghold of Gibraltar. It occupies a rocky peninsula jutting out into the sea, about three miles long and three-quarters of a mile wide. One central rock rises to a height of 1,435 feet above the sea level. Its northern face is almost perpendicular, while its east side is full of tremendous precipices. On the south it terminates in what is called Europa Point. The west side is less steep than the east, and between its base and the sea is the narrow, almost level span on which the town of Gibraltar is built. The fortress is considered impregnable to military assault. The regular garrison in time of peace numbers about 7,000.—The biggest cavern is the Mammoth Cave, in Edmonton County, Kentucky. It is near Green River, about six miles from Cave City, and twenty-eight from Bowling Green. The cave consists of a succession of irregular chambers, some of which are large, situated on different levels. Some of these are traversed by the navigable branches of the subterranean Echo River. Blind fish are found in its waters.—The longest tunnel in the world is that of the St. Gothard, on the line of railroad between Lucerne and Milan. The summit of the tunnel is 900 feet below the surface at Andermatt, and 6,600 feet beneath the peak of Kastlehorn, of the St. Gothard group. The tunnel is 26½ feet wide, and is 18 feet 10 inches from the floor to the crown of the arched roof. It is 9½ miles long.—The biggest trees in the world are the mammoth trees of California. One of a grove in Tulare County, according to measurements made by members of the State Geological Survey, was shown to be 276 feet in height, 108 feet in circumference at base, and 76 feet at a point 12 feet above ground. Some of the trees are 376 feet high, and 34 feet in diameter. Some of the largest that have been felled indicate an age of from 2,000 to 2,500 years.—The largest library is the Bibliothèque National, in Paris, founded by Louis XIV. It contains 1,400,000 volumes, 300,000 pamphlets, 175,000 manuscripts, 300,000 maps and charts, and 150,000 coins and medals. The collection of engravings exceeds 1,300,000, contained in some 10,000 volumes. The portraits number about 100,000.—The largest desert is that of Sahara, a vast region of Northern Africa, extending from the Atlantic Ocean on the west to the valley of the Nile on the east. The length from east to west is about 3,000 miles, its average breadth about 900 miles, its area about 2,000,000 square miles. Rain falls in torrents in the Sahara at intervals of five, ten and twenty years. In summer the heat during the day is excessive, but the nights are often cold.

FACTS FOR HOUSEKEEPERS.—Applying kerosene with a rag when you are about to put your stoves away for the summer, will prevent them from rusting. Charcoal is recommended as an absorber of gases in the milk-room where foul gases are present. It should be freshly powdered and kept there continually. A teaspoonful of borax put in the last water in which clothes are rinsed, will whiten them surprisingly. Pound the borax so it will dissolve easily. One teaspoonful of ammonia to a teacup of water applied with a rag will clean silver or gold jewelry. Clear boiling water will remove tea stains; pour the water through the stain and thus prevent its spreading. Salt will curdle new milk; in preparing porridge, gravies, etc., salt should not be added until the dish is prepared. Paint stains that are dry and old may be removed from cotton or woollen goods with chloroform. First cover the spot with olive oil or butter. Rain-water and soap will remove machine grease from washable fabrics. Fresh meat beginning to sour will sweeten if placed out of doors in the air over night. Boiling starch is much improved by the addition of sperm or salt, or both, or a little gum arabic dissolved Milk which has changed may be rendered fit for use again by stirring in a little soda. Fish may be scaled easier by first dipping them into boiling water for a minute. Kerosene will soften boots and shoes that have been hardened by water, and render them pliable as new. A tablespoonful of turpentine boiled with your white clothes will aid the whitening process. Wetting the hair thoroughly once or twice with a solution of salt and water will keep it from falling out. What Sapolio will do. It will clean paint, make oil cloth bright, and give the floors, tables, knives, dishes, etc., a new appearance.

THE NAME OF GOD IN FORTY-EIGHT LANGUAGES.—Æolian and Doric—Ilos. Arabic—Allah. Armorian—Teuti. Assyrian—Eleah. Celtic and Gallic—Diu. Chaldaic—Eilah. Chinese—Prussa. Coromandel—Brama. Cretan—Thios. Danish and Swedish—Gut. Dutch—Godt. English and Old Saxon—God. Finch—Jumala. Flemish—Goed. French—Dieu. German and Swiss—Gott. Greek—Theos. Hebrew—Elohim, Eloha. Hindostanee—Rain. Irish—Dia. Italian—Dio. Japanese—Goezur. Lapp—Jubinal. Latin—Deus. Low Breton—Doue. Low Latin—Diex. Madagascar—Zannar. Malay—Alla. Modern Egyptian—Teun. Norwegian—Gud. Olalu Tongue—Deu. Old Egyptian—Teut. Old German—Diet. Pannonian—Istu. Persian—Sire. Peruvian—Puchecammae. Polish—Bog. Pollacca—Bung. Portuguese—Deos. Provençal—Diou. Runic—As. Slav—Buch. Spanish—Dios. Syriac and Turkish—Alah. Tartar—Magatal. Teutonic—Goth. Zemblain—Fetiza.

THE FIRST DAY OF JANUARY.—The 1st of January has not always been the first day of the year. For 700 years prior to the fifteenth century the year commenced on Christmas Day. After that it commenced on March 25th. It was in 1752 that what was known as the new style was introduced, and 1753 commenced on January 1st. At the same time the dates were moved on eleven days by taking the day after September 2nd as the 14th.

RAILWAY FARES IN VARIOUS COUNTRIES, in pence per 100 miles:—

	Classes.				Classes.		
	1st.	2nd.	3rd.		1st.	2nd.	3rd.
Norway	105	68	48	Portugal	162	125	85
Belgium	115	85	56	Italy	173	125	85
Denmark	155	105	68	Austria	180	135	90
Sweden	155	105	68	Spain	200	154	95
Germany	154	115	77	Great Britain	230	160	95
Holland	160	135	77	France	192	144	105
Russia	182	136	77	Turkey	290	230	145
Switzerland	160	115	81				

POUNDS OF LUGGAGE ALLOWED FREE IN VARIOUS COUNTRIES.—*England.*—Passengers from towns north of London are entitled to free conveyance of luggage for 1st class, 120 lbs.; 2nd class, 100 lbs; third class, 60 lbs. Through tickets from London to the Continent are subject to the allowance as undermentioned:—*France.* Holders of 1st and 2nd class tickets on the Northern of France Railway, 25 kilos., or about 56 lbs. free; on the Paris and Lyons and East of France Railways, 30 kilos., or 66 lbs. free.—*Belgium and Holland.* On tickets purchased locally no free luggage is allowed; but tickets furnished by THOMAS COOK & SON, London, include the free conveyance of 56 lbs. luggage.—*Germany.* A few only of the German lines convey the luggage of through ticket-holders free; but *all* T. COOK & SON'S tickets entitle the holders to the free carriage of 56 lbs.—*Austria and Hungary.* 56 lbs. free.—*Russia.* 56 lbs. free.—*Spain.* 66 lbs. free.—*Sweden.* 66 lbs. free.—*Switzerland.* No free luggage allowed except small parcels taken into the carriage with the traveller.—*Italy.* Regulations same as Switzerland. The baggage taken into the carriage by the passenger must not exceed the dimensions of 19 ins. by 10 ins. by 12 ins., and must be placed so as not to inconvenience other travellers. Lake and river steamers all over the Continent, usually 110 lbs. For excess fare it is safe to reckon it at about one-half third class fare for each hundredweight booked.—*United States.* Brasses are always given for luggage, and 150 lbs. allowed.

THE LIFE OF A PATENT IN VARIOUS COUNTRIES.—The following shows the length of time for which patents are granted in different countries, but it should be borne in mind that in some cases the term can be extended, and in most countries they expire with any earlier *foreign* patent for the same invention:—Chili and Norway, 10 years; England, India, New South Wales, Queensland, South Australia and Cape Colony, 14 years; Canada, Austria-Hungary, Brazil, France and Germany, 15 years; United States, 17 years; Belgium, 20 years; Italy and Portugal, 1 to 15 years; Paraguay, to 10 years; Russia, 3, 5 or 10 years; Sweden 3 to 15 years; Argentine Republic and Turkey, 5, 10 or 15 years; Spain, 5 to 20 years; Denmark (Native), 15 years; Denmark (Foreign), 5 years.

HISTORICAL BALLOON ASCENTS.—1782. Montgolfier ascends in first fire balloon.—1783. Montgolfier ascends 9,770 feet.—1784. First ascent in England. From Moorfields, London, by Vincent Lunardi.—1804. Gay-Lussac ascends at Paris to the height of 22,977 feet.—1836. Ascent by Hollond and others from Vauxhall Gardens, London. Descent after 18 hours at Weilburg in Nassau.—1837. Parachute descent from balloon at Vauxhall. Unsuccessful, and parachutist killed.—1850. Bixio and Barral ascend 19,000 feet from Paris.—1859. Mr. Wise travels 1,150 miles from St. Louis, United States, in a balloon. Mr. Glaisher ascends 5 miles from Wolverhampton.—1862. Coxwell and Glaisher ascend 7 miles from Wolverhampton.—1863. Ascent of Nadar's great balloon, the largest ever made. It contained 215,363 cubic feet of gas, and raised 35 persons at one time.—1870-1. During the siege of Paris 64 balloons were sent up, containing 91 persons and 3 million letters.—1874. Vincent de Groof killed in an attempt to use his flying parachute.—1875. Ascent of Tissandier, Crou-Spinelli, and Sivel from Paris. At 26,160 feet ballast thrown out. The further ascent kills the two latter, but the former reaches ground in safety.—1881. Mr. Walter Powell, M.P., drifts out to sea in a balloon and is never heard of again.—1882. Colonel Burnaby crosses the English Channel in a balloon.—1886. M. Lhoste crosses from Cherbourg to Tottenham.—1887-90. Various parachute descents successfully accomplished by Baldwin and others.

REMARKABLE EARTHQUAKES.—A.D. 17. Pompeii and Herculaneum. Accompaniment of eruption of Vesuvius.—742. Syria, Palestine and Asia. 500 towns destroyed.—1531. Lisbon. 1,500 houses and 30,000 persons destroyed.—1692. Jamaica, Port Royal totally destroyed. 3,000 lives lost.—1693. Sicily. 54 towns and 300 villages affected. More than 100,000 lives lost.—1703. Aquila in Italy. 5,000 perished.—1703. Jeddo, Japan. 200,000 lives lost.—1716. Algiers. 20,000 perished.—1726. Palermo. 6,000 lives lost.—1731. Pekin. Estimated loss of life, 100,000 persons.—1746. Peru. 18,000 deaths.—1754. Cairo. 400,000 lives lost.—1755. Lisbon and Portugal generally. 50,000 died in Lisbon alone. This earthquake extended 5,000 miles, and was felt even in Scotland.—1759. Syria, over a large area. 20,000 lives lost.—1773. Guatemala. 33,000 perished.—1797. Quito. 41,000 killed.—1822. Aleppo. 22,000 lives lost.—1829. Murcia (Spain). 6,000 killed.—1830. Canton. Loss, 6,000 lives.—1842. St. Domingo. Between 4,000 and 5,000 lives lost.—1857. Calabria. 10,000 lives lost.—1859.—Quito. 5,000 lives lost.—1861. Mendosa, South America. 7,000 killed.—1868. Peru and Ecuador. 25,000 killed, 30,000 rendered homeless, and loss of property estimated at £60,000,000.—1875. Colombia. 14,000 lives lost.—1881. Scio. 4,000 killed.—1884. Severe shocks felt in Southern and Eastern England.—1885. Cashmere. More than 3,000 deaths, 70,000 buildings destroyed.—1887. Several shocks felt in Southern France and the United States.—1888. Yunnan, China. 40,000 killed.

ANCIENT AND MODERN SCHOOLS OF PHILOSOPHY.

PYTHAGOREAN, 535 B.C.—This school was founded by Pythagoras, who was born at Samos 580 B.C., and is said to have been the first to assume the title of philosopher, or lover of wisdom. The distinguishing feature of his system, the doctrine of metempsychosis, or the transmigration of souls, prevailed among the Egyptians and the Hindus. This system, which declined 300 B.C., was revived about 100 B.C.

SOCRATIC, 425 B.C.—Socrates was born in Athens in 470; died there in 399 B.C. His fundamental doctrine was that virtue is intellectual, a necessary consequence of knowledge, while vice is ignorance and akin to madness. Knowledge, virtue, and happiness he held to be inseparable. His religious doctrines culminated in the conception of the Deity as the author of the harmony of nature and the laws of morals, revealed only in his works, and of the soul as a divine and immortal being, resembling the Deity in respect of reason and invisible energy.

PLATONIC (the Academy), 374 B.C.—Plato, the founder of this school, was born 429 B.C. The distinctive character of his philosophy is expressed by the word idealism, as opposed to realism, materialism, or sensationalism; the capacity of forming and using ideas being taken as an essential virtue or quality of mind as contrasted with matter. He advocated the so-called *Platonic love*, a pure, spiritual affection subsisting between the sexes, unmixed with carnal desires, and regarding the mind only and its excellencies.

PERIPATETIC (the Lyceum), 334 B.C.—This philosophy was founded by Aristotle the Stagirite, who became a pupil of Plato 367 B.C. He was appointed tutor to Alexander the Great 342 B.C., and was assigned the Lyceum at Athens, as a school wherein to teach his disciples, 333 B.C. From his habit of giving lessons while walking in the groves of the Lyceum at Athens, his system has received the title of the Peripatetic school. He divided the circle of knowledge into metaphysics and logic, physics, and ethics. To him is attributed the assertion that nature abhors a vacuum, an opinion now maintained by eminent modern philosophers.

SCEPTIC, 334 B.C.—This sect of philosophers was founded by Pyrrho. He gave ten reasons for continual suspense of judgment; he doubted of everything; never made any conclusions; and when he had carefully examined the subject and investigated all its parts, he concluded by still doubting of its evidence. He advocated apathy and unchangeable repose. These doctrines were held by Bayle, who died 1706.

CYNIC, 330 B.C.—The name of this school of philosophers is believed to be derived from the Cynosarges, a gymnasium in the suburbs of Athens, in which their founder, Antisthenes, used to lecture. Diogenes, 412-323 B.C., was one of the most celebrated of this school. This sect professed to contemn all worldly things, even sciences, except morality, and lived in public with little shame.

EPICUREAN, 306 B.C.—Epicurus, of Gargettus, near Athens, about 306 B.C., taught that the greatest good consists in peace of mind springing from virtue, as tending to prevent disquiet. But the name Epicurean is frequently given to those who derive happiness from sensual pleasure.

STOIC, 290 B.C.—The Stoics were disciples of Zeno, the philosopher, 358-260 B.C. They obtained the name because they listened to his instructions in a porch (Greek, *Stoa*) at Athens. Zeno taught that man's supreme happiness consisted in living agreeably to nature and reason, and that God was the soul of the world.

MIDDLE ACADEMY, 278 B.C.—The founder of this academy was Anesilaus, a Greek philosopher, born at Pitane, in Æolia, about 316 B.C. He advocated the Socratic or colloquial method of discussion, although he depreciated dialectic proper, and seems to have carried out thoroughly the sceptical element in the Platonic school. His theory of knowledge was developed in direct antagonism to that of the Stoics. The final result of his speculation was that he could not know anything, not even his own ignorance.

NEW ACADEMY, 160 B.C.—Carneades, a Greek philosopher, founder of this academy, was born at Cyrene about 213 B.C., and died 129 B.C. By a series of plausible arguments, he endeavoured to prove the non-existence of God, and dispense with all general ideas of morality, human rights, duties, etc. But when he seems to have destroyed everything, he suddenly concludes that all these arguments prove merely that absolute metaphysical knowledge is as unnecessary as it is impossible, and that man ought to be satisfied with probabilities and expediencies.

NEO (New) PLATONISTS, 243 A.D.—This name is given to the philosophers of the school of Alexandria, who endeavoured to combine the doctrines of Plato and Christianity into one system. The sect was founded by Ammonius, named Saccas (160-243), and numbered Plotinus (205-270) and Porphyry (233-305) among its most distinguished members. Proclus, one of the last distinguished members of the sect, died in 485. Some writers style Philo Judæus, and some of the early fathers, Neo-Platonists.

CARTESIAN, 1560.—Descartes René (Latin, *Renatus Cartesius*), the founder of this school, was a French philosopher, born 1596; died 1650. The fundamental principles of his philosophy relate to the essential difference of spirit and matter; the thinking and the extended substances; to the demonstration of the existence of God from the very idea of the infinite. As a metaphysician, he was the fountain-head of the speculation of a whole subsequent century.

RATIONAL, 1620.—Francis Bacon, who was the originator of this school of philosophy, was born in London in 1561, and died 1626. The gist of his work was a setting forth of what is called the inductive method; studying causes from effects, and reasoning from facts to theories. His celebrated work, *Novum Organum*, was first printed 1620.

Reflective, or Perceptive, 1690.—The founder of this school was John Locke, born 1632; died 1704. His *Essay on the Understanding* marks an epoch in the history of philosophy. His purpose was to inquire into the powers of the human understanding, with a view to find out what things it was fitted to grapple with, and where it must fail so as to make the mind of man "more cautious in meddling with things exceeding its comprehension, and disposed to stop when he is at the utmost extent of its tether." This purpose led him to that thorough investigation of the constitution of the human mind resulting in the most numerous and important contributions ever made by one man to our knowledge on this subject.

Idealistic, 1710.—The originator of this school was George Berkeley, an Irish philosopher, born 1684; died 1753. He maintained that the eye has no natural perception of space, and that all notions of distance, size, and position are derived from touch. He denied the existence of matter, and argued that it is not without the mind, but within it; and that what is generally called matter is only an impression produced on the mind by means of invariable rules, called laws of nature.

Elective, 1710.—This school of philosophy was founded by Gottfried Wilhelm von Leibnitz, born at Leipzig 1646; died 1716. The most important peculiarities of his system may be reduced to four: his doctrine as to the Origin of Ideas, his theory of Monads, the Pre-established Harmony, and the theory of Optimism.

Common Sense, 1750-70.—Thomas Reid, the originator of this school, was born 1710; died 1796. In opposition to Hume's scepticism, he tried, in his *Inquiry into the Human Mind on the Principle of Common Sense*, to establish a series of fundamental truths independent of experience, and indisputable as primitive facts of consciousness.

Transcendental, 1770—1860.—Immanuel Kant, a German metaphysician, was the originator of this school—the transcending or going beyond empiricism, and ascertaining *à priori* the fundamental principles of human knowledge. He proved that empiricism is right so far as it asserts that the matter of our ideas is drawn from without, but wrong so far as it implies that their form can also there be found. His system is allied with the principle of the common-sense philosophy, in ascribing an absolute validity to those moral ideas, by which life is and must be guided.

Scientific, 1800-14.—This school was founded by a German philosopher, Johann Gottlieb Fichtë, born 1762; died 1814. His philosophy was intended to amplify that of Kant, who argued that objects *per se*, as they really are, are unknown to man. Fichtë attempts to prove that between objects as they appear to human conception, and as they actually are, there is no real difference, since the forms of human cognition are identical with the action of the absolute intellect. God (the absolute subject, the great active and creative "I") and nature (the "not I," the aggregate of objects) are united in a similar manner as soul and body; the absolute intellect pervades everything, and the human mind is an integral part of it.

Absolute Identity, 1800-20.—Friedrich Wilhelm Joseph von Schelling, a German philosopher, was the founder of this school, born 1775; died 1854. In 1794 appeared his first metaphysical essay on the "Possibility of a Form of Philosophy," reproducing in an independent way the subjective idealism of Fichtë, and emphasising the Ego as the fixed centre of speculation, in which both substance and form are identical.

Agnostic.—The word is applied to those who, professing ignorance, neither assert nor deny, especially as to the existence of a Deity.

Absolute Idealism, 1810-30.—This school was founded by Georg Wilhelm Friedrich Hegel, born 1770; died 1831. Of his whole system, the most general idea is that of God or the absolute spirit. The spirit is not mere substance, as in Spinoza, but also subject, and as such contains the principle and law of its own evolution.

Utilitarian, 1790—1873.—The originator of this school was Jeremy Bentham, born 1748; died 1832. He rejected the fiction of an original contract, and in place of conformity to the laws of God and nature, he suggested "the greatest happiness of the greatest number" as the best test of right and wrong, both in morals and laws. John Stuart Mill, born 1806, died 1873, published his *Utilitarianism* in 1862.

Positive, 1830.—Auguste Comté, a French philosopher, was the first to advocate this system; born 1798; died 1857. In 1830 he began the publication of his chief work, *Cours de Philosophie Positive*. He excludes from philosophy everything but the natural phenomena or properties of knowable things, together with their invariable relations of co-existence and succession, as occurring in time and space, such relations denominated *laws*, which are to be discovered by observation, experiment, and comparison. This philosophy holds all inquiry into *causes*, both efficient and final, to be useless and unprofitable.

Evolution, 1858.—In 1852 Herbert Spencer argued that species have undergone modification through change of circumstances. On July 1st, 1858, two essays were read before the Linnæan Society, one by Charles Robert Darwin, entitled "On the Tendency of Species to form Varieties, and on the Perpetuation of Species and Varieties by means of Natural Selection;" the other by Alfred Russel Wallace, entitled "On the Tendency of Varieties to depart indefinitely from the Original Type." In 1859 Darwin published the treatise entitled *On the Origin of Species by means of Natural Selection*. In this work he did not apply the doctrine of evolution to the human race, although he had long held the opinion that man must be included with other organic beings, and it was not until after Huxley, Spencer, Lyell, Lubbock, Gegenhaur, Vogt, Hæckel, Canestrini, and Francesco had accepted the extreme conclusion, that he published in 1871 *The Descent of Man and Selection in Relation to Sex*.

Modern Spiritualistic, 1848.—This system can scarcely be said to have been founded by any one individual. It grew out of alleged spiritual phenomena, said to have first occurred in 1848 at Hydesville, New York, in the house of John D. Fox. It holds, as fundamental doctrines, that departed spirits communicate palpably and unmistakably with man, and speak through him; that the Bible is no more divinely inspired than any other history of events; that the doors of eternal progression are open to all mankind; that endless punishment is an impossibility; and that true religion consists in a belief in one Supreme Being, all-wise, all-powerful, and all-good, in love towards your neighbour, and in charity to all.

MUNIFICENCE WITH WHICH FOREIGN GOVERNMENTS SUPPORT THEIR RULERS.

Amounts reduced to £ sterling.

Argentine Confederation.—The President, elected for six years, has a salary of £10,000; the Vice-President, £2,000; and each of the five cabinet officers, £1,800.

Austria-Hungary.—The Emperor-King has a civil list of £920,000; one half of this sum, £460,000, is paid to him as Emperor of Austria, out of the revenue of German-Austria, and the other half as King of Hungary, out of the revenue of Hungary.

Belgium.—The King has a civil list yearly income of £132,000.

Brazil.—The personal civil list of the Emperor is not reported separate from the general list. The 58 Senators receive a salary of £360 each, and the members of the Lower House of Congress, £40 with expenses.

Cape of Good Hope.—The Governor (appointed by England) has a salary of £5,000, besides £1,000 as "Her Majesty's High Commissioner," and an extra allowance of £300 for a country residence.

Ceylon.—The Colonial Governor receives an annual salary of £8,000, and the Secretary, £2,200.

Chili.—The President's salary is fixed at £4,500.

China.—The Emperor makes no returns of receipts or expenditures.

Denmark.—The King has a civil list of £55,000 settled upon him by vote of the Rigsdag, approved December 17th, 1863. The heir-apparent of the Crown has, in addition, an allowance of £6,600, settled by law of March 20th, 1868.

Dominion of Canada.—The Governor-General has a salary of £10,000 per annum, and each of the 13 ministers a salary of £1,400.

Egypt.—The Khedive has an annual allowance of £150,000; his father, £50,000; with £70,000 for other members of the family.

France.—The President of the Republic receives a salary of £24,000 per year, with an additional allowance of £12,000 for household expenses.

Greece.—By decision of the Greek National Assembly of May 15th, 1863, a civil list of 1,125,000 drachmas, or £32,150, was settled on the King, to which the Governments of Great Britain, France, and Russia added £4,000 each.

Hong-Kong.—The Governor (appointed by the British Government) has an annual allowance of £6,000.

India.—The Governor General (appointed by the British Government) receives a salary of £25,000 a year, exclusive of allowances estimated at £12,000 a year.

Italy.—The "Dotazione della Corona," or civil list of the King, has been settled at 16,250,000 lire, or £650,000. The brother of the king has an "Appannaggio," or State allowance, of 300,000 lire, or £12,000; and his cousin an allowance of 200,000 lire, or £8,000. To these sums are added 100,000 lire, or £4,000, as "Spese di rappresentanza." Extraordinary expenses of the Court, such as the journeys of the Sovereign into the different provinces of Italy, are paid out of the public exchequer, the same as the cost of building and repairing the royal residences.

Japan. The Mikado's civil list amounts to about £458,000 annually. Until recently a large share of the administrative government was in the hands of Daimios. A list of these published a few years ago placed the number at 266, with incomes varying from £15,000 to £900,000, the territory of each Daimio forming a sort of sovereignty.

Java.—The Colonial Governor-General is appointed by the Netherlands Government, and no returns for salary are made separate from those of the ruling country.

Mauritius.—The British Colonial Governor receives a salary of £6,000, and the Secretary, £1,350.

Montenegro.—The annual civil list of the Prince is only 8,000 ducats, or £1,410. To this allowance the Emperor of Russia has added £1,400, and the Austrian Government £2,000, making an annuity of £3,400.

Natal.—The Colonial Governor (appointed by England) gets a salary of £2,500.

Netherlands.—The King has a government income of £8,100, and an appropriation of half as much more as a subsidy for the maintenance of the royal palaces. His family also are in possession of a large private income.

Persia.—The reigning Shahs are supreme. The whole revenue of the country being at their disposal, recent sovereigns of Persia have been able to amass a large private fortune. That of the present occupant of the throne is reported to amount to £4,000,000, one-half represented by diamonds the largest, the Derya-i-Noor, of 178 carats—and other precious stones, forming the Crown jewels.

Portugal.—The King has a civil list of 365,000 milreis, or about £82,000; while his consort has a grant of 60,000 milreis, or £12,300, and the king 100,000 milreis, or £22,500. The whole grants to the royal family—*dotacao da familia real* amount to 591,000 milreis, or nearly £120,000.

Prussia.—Until recently the Kings of Prussia received the entire income of the State domains, amounting to about £1,000,000 per annum. Since the establishment of constitutional government, however, this arrangement has been changed, and the domains have become public property, in so far as the income is paid into the public exchequer, after deduction of certain sums provided for the "Krondotations Rente," or civil list. The amount of the civil list was fixed by the constitution of January 31st, 1851, but has since been increased at different dates. At present the total "Krondotations Rente," as far as it figures in the budgets, amounts to about £615,000. The reigning house is also in possession of a vast amount of private property, comprising castles, forests, and great landed estates in various parts of the kingdom, known as "Fideikomiss-und-Schatullgüter," the revenue from which mainly serves to defray the expenditure of the court and the members of the royal family.

Roumania.—The Prince receives an annual government allowance of 900,000 lei, or about £36,000.

Russia.—The Emperor is in possession of the revenue from the Crown domains, consisting of more than a million of square miles of cultivated land and forests, besides gold and other mines in Siberia, and producing a vast revenue, the actual amount of which is, however, unknown, as no reference to the subject is made in the budgets of finance accounts, the Crown domains being considered the private property of the imperial family. The sum total of the annual net income of the imperial family is £2,000,000.

Siam.—No civil list of the reigning King is reported. The entire public revenue is estimated at £3,150,000. The Government takes all receipts and pays all expenses.

Spain.—The annual grant to the Queen was fixed by the Cortes in December 1879, at 450,000 pesetas, or £18,000, with a jointure of 250,000 pesetas, or £10,000, in the case of widowhood. The parents of the King (ex-Queen Isabel and her husband) have an allowance of £42,000, and the four infantas, his sisters, of £34,000. The total amount of the civil list and allowance to the relatives of the King was fixed by the Cortes in 1876 a £400,000.

Sweden and Norway.—The royal family of Sweden and Norway have a civil list of 1,338,000 kronor, or £75,000, from Sweden, and 433,922 kronor, or £25,000, from Norway. The Sovereign, besides, has an annuity of 300,000 kronor, or £17,000, voted to King Carl XIV. and his successors on the throne of Sweden.

Switzerland.—The Chief Executive authority is vested in a "Bundesrath," or State Council, of seven members (elected for three years), each of whom receives a salary of £500; while the President receives one of £600.

Turkey.—The Sultan is entirely independent in the matter of income, and makes no return to the country either in the matter of income or expenditure.

United States Government.—*President and Cabinet.* President, £10,000 and residence; 7 Cabinet Heads of Departments, each £1,600.—*Vice-President.* Vice-President, £1,600; Secretary, £420; Messenger, £288.—*Senate.* Two Senators from each State, £1,000 each, with mileage (10*d.* per mile), stationery (£25), franking privilege, and expenses on committees and special deputations.—*House of Representatives.* Speaker, £1,600; Representatives and Delegates, £1,000, with mileage (10*d.* per mile), stationery (£25), and franking privilege.

THE STANDING ARMIES OF THE WORLD: HOW CONSTITUTED.

Austria-Hungary.—The standing army is formed on the system of universal liability to arms after 20 years of age; term of service 10 years; 3 years in active and 7 years in the army of reserve, with further liability to serve 2 years in the Landwehr. Promotion is by seniority, or "in turn," and by selection "out of turn."

Argentine Republic.—The army of the confederation had, according to the latest statistics, about 10,000 men, and a militia and national guard numbering about 20,000 men.

Belgium.—The standing army is formed by conscription, to which every able man over 18 is liable; term of service 8 years, of which two-thirds are allowed generally on furlough. There is also a *garde nationale.*

Bolivia.—The regulation strength of the army in time of peace is 3,000, as follows: 8 generals, 1,012 subaltern officers, and 2,000 men; the annual cost is about two-thirds of the revenue. During the late war with Chili, however, the army far exceeded this strength.

Brazil.—The army is formed partly by enlistment and partly by conscription; liberal bounties at the end of 14 years' service induce many to enlist; exemption from military service obtained by substitution or payment of £120 to the Government.

Canada.—Canada has a large volunteer force and a newly organised militia, consisting of all male British subjects between 18 and 60; volunteers have to serve 3 years, and the regular and marine militia 2 years.

Chili.—The army of Chili is raised by conscription, supplemented by voluntary enlistment. A law passed in 1875 fixed the total strength at 3,573 men, but in the late war with Bolivia and Peru the force was largely increased.

China.—The standing military force of China consists of two great divisions, the first formed by the more immediate subjects of the ruling dynasty, the Tartars, and the second by the Chinese and other subject races; it is mainly used to act as a constabulary in the various departments of the empire.

Colombia.—The strength of the federal army, by the terms of the constitution, is to be from 2,000 to 3,000 men on the peace footing; in the time of war each of the States is required to furnish a contingent of 1 per cent. of its population

Denmark.—In Denmark all the able-bodied men of the kingdom who have reached the age of 22 years are liable to service for 8 years in the regular army, and for 8 years subsequent in the army of reserve.

Egypt.—The army of Egypt is raised by conscription, irregular levies being held every 2 or 3 years; immunity may be purchased by payment of tax. The monthly pay ranges from 20 piasters for a private to £5 for a captain, £40 for a full colonel, and £75 for a full general.

France.—In France the law of 1872 enacts universal liability to arms; substitution and enlistment for money are forbidden; term of service 5 years in the active army, 4 years in the reserve, 5 years in the territorial army, and 6 years in the reserve of the territorial army. Young men who can pass the required examination can enlist as volunteers for 1 year. All soldiers in the active army who can read and write may be sent on furlough, at the end of a year, for an indefinite time. Officers are promoted by regimental seniority, or for personal distinction in the field, etc.

Germany.—According to the law of 1871 every German is liable to service, and no substitution is allowed; term of service: 3 years in active service, 4 years in the army of the reserve, and 5 years in the Landwehr. The Landsturm comprises all able-bodied men who are not in the army. The Prussian military legislation is applied to all the States of the empire. The pay of the German officers in the lower ranks is small, but the higher ranks are well paid. Promotion in the army depends solely on the will of the Emperor, but in the main is governed by selection and seniority.

Great Britain.—Since 1690 the maintenance of a standing army has been sanctioned by an annual vote of the House of Commons. The British army is filled up exclusively by recruiting; term of service, 12 years, after which a soldier can serve 9 years more; at the end of 3 years he can also enter the reserve, 1 year in the regular army being counted as 3 in the reserve. The colonies all have a militia and a volunteer corps of their own. The rate of daily pay of the private soldier is: infantry, 1*s.*; cavalry, 1*s.* 2*d.*; artillery, 1*s.* 2½*d.*; engineers, 1*s.* 1½*d.* Promotion to the rank of captain is usually by regimental seniority, but examinations for promotion to the grades of captain and major are required in all arms of service. All promotions are made upon the recommendation of the Commander-in-chief, with the approval of the Secretary of State for War.

Greece.—The army of Greece, till recently, was raised by conscription, but since 1879 the law provides that all able-bodied males, aged 21 years and upwards, shall be compelled to serve; term of active service 3 years, in the reserve 6 years, and in the militia 10 years.

India, British.—The entire constitution of the Indian army is at present under the consideration of a commission. There are three Indian armies, each composed of European and native troops, and a fourth army, known as the Punjab frontier force, under the immediate orders of the lieutenant-governor of the province. Promotion is generally by length of service, 12 years to attain the rank of captain, 20 years that of major, and 26 that of lieutenant-colonel.

Italy.—The German law of universal liability to arms forms the basis of the present military organisation of Italy; term of service in the standing army is 3 years in the infantry and 5 years in the cavalry, in the army of the reserve 9 years; young men able to pass an examination have to remain but 1 year in the service; the national militia is composed of 232 battalions of infantry, 15 battalions of cavalry, 60 battalions of artillery, and 10 companies of engineers. Promotion to major in time of peace is half by seniority and half by selection. All promotions above the grade of major are by selection, the candidates being required to pass practical examinations.

Japan.—The standing army of Japan is composed of the troops kept by the Mikado; the decree of 1872 making the liability to arms universal has not been carried out. A number of Japanese officers and sub-officers were in recent years instructed by French military men at Yokohama. The pay of non-commissioned officers, in addition to clothing and rations, is about 6*s.* per month, and the pay of cadets about 12*s.* per month.

Luxemburg.—According to the law of 1868 the standing army of Luxemburg consists of one battalion of chasseurs.

Mexico.—The standing army of Mexico is composed of 20 battalions of infantry, 10 corps of cavalry, and 4 brigades of artillery; the ordinary expenditures of the department of war and marine have for a number of years averaged over £1,600,000.

Netherlands.—The army of the Netherlands is formed partly by conscription and partly by enlistment, consisting of a regular army, a colonial army, and a militia; men drawn by conscription, at the age of 20, serve, nominally, 5 years, but are only required to drill for 10 months, and are then sent home on furlough subject to 6 weeks' annual training. About one-third of the militia is made up of men who have served in the regular army. The officers are all drawn from the upper class, and undergo strict examinations before they pass as cadets.

Norway.—In Norway the standing army is raised mainly by conscription, and to a small extent by enlistment; by the law of 1867 all young men past the age of 21 are liable to the conscription, with the exception of the inhabitants of the three northern provinces; term of service 10 years, dividing into 3 in the line, 4 in the reserve, and 3 in the militia or "landværn"; the number of troops under arms can never exceed 18,000 men without the consent of the Storthing.

Persia.—By the decree of the Shah, issued in 1875, it was ordered that the army of Persia should be raised by conscription, and that a term of service of 12 years should be substituted for the old system, under which the mass of the soldiers were retained for life. The army has recently been reorganised under the direction of Austrian officers.

Peru.—The army of Peru was composed at the end of 1878 of 13,200 men; it was raised to 40,000 men in 1879 at the beginning of the war with Chili, and further increased by conscription to 70,000 men in 1880.

Portugal.—The standing army of Portugal is formed partly by conscription, but more than one half consists of men procured by voluntary enlistment; term of service 8 years, of which 5 years are served in the regular army, and 3 years in the militia.

Roumania.—The military forces of Roumania are divided into four classes: the permanent army with its reserves; the territorial army and its reserves; the militia; and the national guard in the towns; in the conscription, the smaller numbers are taken for the permanent army, the others for the territorial army.

RUSSIA.—The standing army of Russia is raised by conscription. By the new army organisation law, every Russian is liable to service on attaining his 21st year; term of service is 15 years, of which 4 years are spent in the ranks, 2 years on furlough, and 9 years in the reserves; as in Prussia, certain advantages are given to young men of means and good education, who are allowed to shorten their term of service. Those who are not drawn for the active army are sent home after a short training, but for 6 years are liable to be called upon in case of war; after this they pass into the national legions, which include all able-bodied men between the ages of 20 and 38 who are not in active service. Promotion is by seniority in the infantry and cavalry to the rank of captain, in the artillery and engineers to the grade of lieutenant-colonel, but above these grades promotion is entirely by selection, based on reports from the generals of brigade and division.

SERVIA.—The military forces of Servia comprise a standing army, a militia, and a newly organised volunteer service; all able-bodied men must serve between the ages of 20 and 50; the period of service in the standing army is 3 years, and in the militia 27 years.

SPAIN.—The armed forces of Spain consist of a permanent army, a first or active reserve; and a second or sedentary reserve; all Spaniards past the age of 20 are liable to be drawn to serve 4 years in the ranks, and 2 years in the reserve; in 1872 a new military law was laid before the Cortes, by which the annual contingent was to be taken by position (according to age) on the lists, instead of by ballot, and the term of service was fixed at 7 years: 3 in the ranks, 2 in the first reserve, and 2 in the second reserve.

SWEDEN.—The Swedish army is composed of 4 distinct classes of troops: the *Värfvade*, or enlisted troops, the *Indelta*, or national militia, the militia of Gothland, and the Bevaring, or conscription troops, drawn by annual levy of able-bodied Swedes between the ages of 20 and 25 years.

SWITZERLAND.—The constitution of Switzerland forbids the maintenance of a standing army within the limits of the confederation, but every able-bodied citizen is liable to military service at the age of 20; the troops of the republic are divided into two classes, the Bundesansrug or federal army, consisting of all men able to bear arms, from the age of 20 to 32; and the Landwehr or militia, comprising all men from the 33rd to the completed 44th year. The nomination of officers, and promotions up to the rank of captain are made by the cantonal governments; promotion to the higher grades and appointments to the staff by the federal authorities, though usually on the recommendation of the cantons.

TURKEY.—As now constituted, the Turkish forces consist of the *nizam* or standing army; *ichtjat*, or first reserve; *redif*, or second reserve; *hijade*, or landsturm; and a certain number of irregular levies. The army is recruited entirely from the Mussulman population; term of service is 20 years, 4 in the ranks, 2 in the *ichtjat*, 6 in the *redif*, and 8 in the *hijade*.

UNITED STATES.—Pursuant to the act of Congress of August 15th, 1870, the standing army of the United States was reduced to a maximum of 25,000 men; term of service is 5 years; the army is composed of 10 regiments of cavalry, 25 regiments of infantry, 5 regiments of artillery, and 1 engineer battalion, besides the cadets at West Point; the militia force and regular army together number 3,759,693 men. The pay of privates runs from £31 (£2 12*s*. a month and rations), for the first 2 years, to £4 a month after 20 years' service; the Commanding General, receives £2,700 a year; colonel, £700; captain, £400; 1st lieutenant, 320; 2nd lieutenant, £280. The President of the United States is commander-in-chief of the army, and the officers, who are furnished by West Point Academy, are promoted by seniority or for extraordinary services. The United States Military Academy at West Point was founded by act of March 16th, 1802, constituting the corps of engineers of the army a military academy with fifty students or cadets, who were to receive instruction under the senior engineer officer as superintendent. Later acts established professorships of mathematics, engineering, philosophy, etc., and made the academy a military department, subject to the rules and articles of war. In 1815 a permanent superintendent was appointed, and a year later an annual board of visitors was provided for, to be named by the President, the Speaker of the House, and the President of the Senate. In 1843 the present system of the appointment of cadets was instituted, which assigns one cadet to each Congressional district and territory in the Union, to be named by the Representative in Congress for the time being, and ten appointments at large, specially conferred by the President of the United States. The number of students is thus limited to 312. The course of instruction is 4 years. Appointees to the military academy must be between 17 and 22 years of age, at least 5 feet in height, free from infirmity, and able to pass the examination required. Each cadet admitted must bind himself to serve the United States 8 years, from the time of admission to the academy. The pay of cadets, formerly £10 per month and rations, was fixed at £108 per year, with no allowance for rations, by the act of 1876. The whole number of graduates from 1802 to 1888 was about 3,000, of whom 1,400 are deceased, and about 1,600 living. Of those surviving 900 are still in the army, and about 700 out of service.

URUGUAY.—The armed forces of Uruguay were officially reported in 1879 to number 2,797 men, of whom 2,049 were infantry; 573 officers, or more than 1 commissioned officer to every 5 men, costing the republic a large part of its revenue.

VENEZUELA.—Venezuela has a small standing army, and besides the regular troops there is a national militia, in which every citizen, from the 18th to the 45th year inclusive, must be enrolled. Recent wars were chiefly carried on by the militia.

HISTORICAL DATA OF THE REPUBLICS OF HISTORY.

DATE AND DURATION OF THE VARIOUS REPUBLICS.

Andorra, a neutral country, with the name of a republic, on the south slope of the Pyrenees, nominally subject to France, but practically independent, the government being vested in twenty-four consuls, elected by the people. Its independence dates from the year 790.

Argentine Republic.—The confederation of the Rio de la Plata, consisting of fourteen provinces, became independent in 1816.

Athens, capital of Attica; at the death of Codrus, eleventh century B.C., the Athenians abolished royalty, no one being deemed worthy to succeed Codrus. It was governed by archons for 1,000 years, when it fell under the power of the Romans and other invaders.

Bolivia, a republic of South America, formerly part of Peru, declared its independence in 1824.

Brazil, United States of, the youngest of the sisterhood of republics, was inaugurated by a peaceful revolution in 1889. There is a President, a Cabinet, and Upper and Lower Chambers, elected by popular vote.

Chili, a South American republic, declared its independence of Spain in 1810, and achieved it in 1817.

Colombia, Republic of, formerly **New Grenada**, a South American Confederation, formed in 1861, of nine States—Panama, Santander, Cauca, Boyaca, Cundinamarca, Antioquia, Tolima, Bolivar, and Magdalena.

Costa Rica, a Central American Republic, founded 1823, when Honduras and other Central American States separated from the Mexican Confederation.

Cracow, ancient capital of Poland, long a bone of contention between Russia, Austria, etc.: became a republic in 1815, but fell into the hands of Russia in 1831.

Ecuador, South American Republic, founded in 1831, when that of Columbia was divided into this state, Venezuela, and New Grenada.

England, oppressed by the arbitrary exactions of Charles I., abolished royalty and beheaded that monarch in 1649; instituted a republic which lasted until 1660, when Charles II. was called to the throne.

Florence, capital of Tuscany, weary of the exactions of its rulers, became an independent republic in 1198, which form of government lasted until Alexander de Medici was appointed perpetual governor in 1530.

France, suffering from the tyranny of the privileged classes and the exactions of royalty, became a republic in 1792, which lasted till 1804, when monarchy was restored; again a republic in 1848; and again in 1870, on the overthrow of Louis Napoleon.

Geneva, a town of the Allobroges, a Gallic tribe, 58 B.C., became part of the empire of Charlemagne, 800 A.D., and capital of the kingdom of Burgundy 426; declared itself a republic 1512, and joined the Swiss cantons 1584.

Genoa, a city of North Italy, said to be older than Rome. With but few interruptions Genoa was a republic for nearly seven centuries, having become a free commercial State about the year 1000 A.D. and remaining so until its independence was extinguished by Bonaparte.

Guatemala, nominally a republic of Central America, formerly a portion of the Mexican Confederation, declared its independence in 1823.

Hayti, a West Indian island, suffered greatly from revolts and invasions; became a republic under the presidency of Toussaint l' Ouverture 1801; lasted three years; again declared a republic in 1848.

Honduras, a republic of Central America, formerly belonging to the Mexican Confederation, from which it separated in 1823 with San Salvador, Nicaragua, Guatemala, and Costa Rica.

Liberia, a negro republic on the west coast of Africa, founded by an American Colonisation Society established in 1816 by Henry Clay. Liberia became independent in 1847.

Mexico, a country in the south part of North America; threw off the Spanish yoke in 1822, and in 1824 established a federal republic somewhat similar to that of the United States.

Nicaragua, a republic of Central America, which became independent of the Mexican Confederation in 1823.

Paraguay, a South American Republic, declared itself independent of Spain in 1810. Since 1870 it has been virtually under the control of Brazil.

Peru, a South American Republic, achieved its independence of Spain in 1825.

Rome, the most celebrated city of the world, became a republic on the expulsion of the Tarquins 509 B.C., and remained so until 27 B.C., when Octavius became emperor.

San Domingo, a republic occupying the eastern and larger part of the island of Hayti, became independent of Spain from 1844 to 1861; was again incorporated with the Spanish monarchy from 1861 to 1865, when the Spanish government relinquished all control of it.

San Salvador, a republic of Central America, declared its independence of the Mexican Confederation in 1823.

Spain declared itself a democratic federal republic in 1873, but restored monarchy shortly afterwards.

Sparta, an ancient republic of Greece, once the rival of Athens. It preserved a republican form of government, with some alterations of monarchy, until, with the rest of Greece, it, in 146 B.C., fell into the hands of the Romans.

Switzerland, suffering from the rule of the emperors and the exactions of the nobles, formed in 1352 the republic or confederation which still exists.

Texas, a south-western State of the American Union, gained its independence of Mexico in 1836; was annexed to the United States ten years subsequently.

Transvaal Republic, The, was founded in South Africa by the Boers in 1858.

United States became a great and independent republic in 1776.

Uruguay, a republic of South America, was founded in 1828.

Venice, founded about the fifth century by a colony of fugitives from northern persecution. Towards the middle of the sixth century they founded a republic which, under the Doges, became in time most powerful, and continued until its extinction by Bonaparte in 1797.

Venezuela, a republic of South America, declared its independence of Spain in 1811, and when the earlier republic of Colombia, of which it formed a part, became disintegrated in 1819, Venezuela adopted a new constitution.

Yucatan, achieved its independence of Spain in 1821. After three years became united to Mexico; was again independent from 1840 to 1843, and once more from 1846 to 1852. It has belonged to Mexico since this latter date.

PECULIARITIES OF THE CONSTITUTIONS OF VARIOUS MODERN REPUBLICS.

America, United States of, governed by a President and Vice-President, elected every four years; by a Senate, elected every six years; and by a House of Representatives, elected every two years. The suffrage is universal, all male citizens, whether native or naturalised, being competent to vote on arriving at the age of twenty-one.

Argentine Republic, modelled on the Constitution of the United States, except that the ministry is responsible to Congress, an adverse vote in the Senate and House leading to the formation of a new Cabinet.

Bolivia is governed by three legislative chambers—one elected for four years, one for eight years, and one for life, which collectively elect a President for life. The administration belongs wholly to the Ministry, which is responsible to the Senate.

Bremen.—This Free City is governed under a constitution adopted March 5th, 1849, and revised February 21st, 1854, by a Senate of eighteen members, forming the Executive and the Bürgerconvent, or Convent of Burgesses, of 150 members, invested with the power of legislation. The Convent is returned by the votes of all the citizens, divided into classes. The citizens who have studied at a university return 16 members; the merchants 48 members; the common traders and shopkeepers 24 members, and the other tax-paying inhabitants of the Free City the rest. The Convent elects the eighteen members of the Senate, ten of whom, at least, must be lawyers. Two burgomasters, the first elected for six years and a half, and the second for four years, direct the affairs of the Senate, through a Ministry divided into eight departments—namely, Foreign Affairs, Church and Education, Justice, Finance, Police, Medical and Sanitary Administration, Military Affairs, and Commerce and Shipping. All the ministers are Senators.

Chili.—The legislative power of this republic is in a National Congress of thirty-seven members, elected for six years, and a Chamber of Deputies, 109 members, elected for three years. The executive power is vested in a President, elected for five years, a Council of State, and five Cabinet ministers. Suffrage is universal to citizens able to read and write, and paying a small annual tax.

Colombia, United States of, has a Senate of twenty-seven members and a Representative Chamber of sixty-one, elected by general suffrage, in which the legislative power resides. The executive power is exercised by a President, chosen every two years by the people of the different states, and by four ministers.

Costa Rica vests the executive power in a President, elected for four years, two Vice-Presidents, and four Ministers. The legislative power is exercised by a Congress of Deputies, chosen for four years.

Ecuador has its government vested in a President, chosen by 900 electors appointed by popular vote; a Vice-President, who is minister of the interior; and three other Cabinet officers. The Congress consists of a Senate of sixteen and a House of thirty members, chosen by popular suffrage.

France has its legislative power vested in a Legislative Corps, consisting of a Senate of 300 members, 225 of whom are chosen for nine years by the departments and colonies, and 75 for life by the National Assembly; and a Chamber of Deputies, now 532 members, elected by universal suffrage, one deputy to 100,000 inhabitants. The executive power is exercised by a President, elected for seven years by a joint vote of the Senate and Chamber of Deputies. He has power to dissolve the Chamber of Deputies on the advice of the Senate. The Ministry or Secretaries of State, consisting of nine members, are responsible to the Chambers for the political conduct of the government, while the President is responsible in cases of high treason only. Every Frenchman of twenty-one years has a right to vote.

Guatemala, the most populous of the five Central American republics; since the revolution of 1871 the executive power has been invested in a President and a Cabinet of four ministers.

Hamburg.—The present constitution of the State and Free City of Hamburg came in force on January 1st, 1861. The Government, "Staatsgewalt," is intrusted, in common, to two Chambers of Representatives, the Senate and the Bürgershaft, or House of Burgesses. The Senate, which exercises chiefly, but not entirely, the executive power, is composed of eighteen members, one half of whom must have studied jurisprudence, while seven out of the remaining eleven "must belong to a class of merchants." The Senators are elected for life, by the House of Burgesses.

Hayti, a West Indian Republic, the legislative and executive power of which is vested in an Assembly and a President, elected for four years.

Honduras is governed by a President and an Assembly of thirty-seven representatives.

Liberia.—The Constitution is modelled on that of the United States of America.

Lubeck.—This "Free City and State" of the German Confederation is governed under a constitution adopted April 7th, 1874. The government is composed of two elected representative bodies, viz., a Senate (of fourteen members elected for life) as the Executive, and a House of Burgesses (Bürgerschaft), holding office for two years, and consisting of 120 members chosen by all citizens who are members of the twelve colleges or guilds of the city.

Mexico.—A President, elected for four years; a Senate, chosen for six years; and a House of Deputies, elected for two years. The Chief Justice of the Supreme Court, elected for six years, is *ex-officio* Vice-President of the republic. Each state of the Confederation has its local constitution with elective governors and legislatures.

Nicaragua has a President, elected for four years; a Cabinet of four ministers; a Senate of ten members; and an Assembly of eleven representatives.

Paraguay, since 1870, has been only nominally a republic; since that date it has been virtually ruled by Brazil.

Peru is governed by a President, chosen for four years; a Senate of forty-four; and a House of Representatives of 110 members.

San Domingo.—The government is vested in a President, elected for six years, who appoints four ministers; Senate of nine members, also chosen for six years; and a House of fifteen members.

San Salvador has a President, elected every four years; a Ministry of five members; and a Congress of twelve Senators and twenty-four Deputies, elected for two years. The suffrage is universal, except for servants and persons without legal occupation.

Switzerland.—The legislative body consists of a National Council of 135 members, elected for three years; and a Council of forty-four members—one for each canton. The executive power is vested in a Council, chosen for three years by the Federal Assembly, and in a President of the Swiss Confederation, elected for one year, from its own members, by the Federal Council.

Uruguay is governed by a President, a Ministry of four Cabinet Officers, and a Legislature of thirteen Senators and forty Representatives.

Venezuela, United States of, has a President, elected for two years. The Confederation is composed of twenty states, besides the Federal district, each of which has its own distinct government, electing delegates to the Congress, which meets annually.

Note.—There are other free cities and petty governments not enumerated here which may savour of republicanism; but these, upon close investigation, will be found not to be totally free from the trammels of monarchy.

CLASSIFICATION OF EXISTING SOVEREIGNTIES:

SHOWING THEIR DEGREES OF ABSOLUTISM OR CONSTITUTIONAL LIMITATION.

ABSOLUTE DESPOTISMS.

China, Russia, Persia, Turkey, Morocco, Tunis, Siam, and Japan, together with some of the governments of India and Africa, are absolute despotisms. Here the people have no voice in the conduct of public affairs, and are simply the slaves of the throne, without any rights to be respected or claims to advance contrary to the will of the sovereign. As may be supposed, the thraldom and sufferings of the masses in these countries are to some extent ameliorated where their rulers are naturally humane; but the right to oppress remains intact, and can at any moment be brought into fearful requisition, and without question. In Japan there is some slight approach to constitutional government; but, notwithstanding, in all issues the power of the Mikado is unlimited, and that of the Daimios most galling.

LIMITED MONARCHIES.

Austria-Hungary has a representative government with responsible ministers. The emperor and nobles, however, hold the preponderance of power.

Belgium is a constitutional representative monarchy, with the powers of the sovereign more limited than those of the Emperor Franz Josef.

Denmark.—A representative form of government, making it indispensable that the king shall belong to the Lutheran Church.

Germany.—A confederation of sovereign states, with largely representative governments, which, although limiting the emperor in certain relations, give him large powers in others.

Prussia.—A representative government, with large powers vested in the king and his ministers.

Bavaria, although a representative monarchy, may rather be termed an oligarchy with the king presiding.

Wurtemburg is, like most of the sovereignties of Europe, without extended representation, and largely in the hands of the king and the nobles.

Saxony.—The whole executive power is in the hands of the king; but he exercises it through responsible ministers.

Baden vests the executive power in the Grand Duke and in a House of Parliament composed of two Chambers.

Mecklenburg-Schwerin is a limited monarchy, feudal in essence, and with the powers of the king most comprehensive, although not absolute.

Hesse.—The legislative power is vested in the king and two Chambers, composed largely of the aristocracy.

Oldenburg has the legislative power vested in a Diet, and the executive in the Grand Duke through a responsible ministry.

Brunswick.—Limited representative, consisting of one Chamber and a ministry.

Saxe-Weimar.—The executive act under the directions of the Grand Duke, but are responsible to the representatives of the country.

Mecklenburg-Strelitz.—Partial representation; the executive exercised by the Grand Duke through one minister of state.

Saxe-Meiningen has one Chamber that meets every three years.

Anhalt has a Diet of thirty-six members. The executive power is exercised by the duke, through a minister of state.

Saxe-Coburg-Gotha.—The legislative power is vested in two separate assemblies, one for the province of Coburg and the other for that of Gotha.

Saxe-Altenburg.—Government similar to that of Saxe-Coburg-Gotha (*q.v.*)

Waldeck has a Legislative Assembly of forty-one members, but the administration of the country is guided by Prussia.

Lippe has a Chamber of Deputies, but the prince governs virtually through one irresponsible minister.

Schwarzburg-Rudolstadt.—For all legislative measures the prince has to obtain the consent of a Chamber of Representatives.

Schwarzburg-Sondershausen has a Diet of restrictive legislative rights; the sole executive and part of the legislative power are in the hands of the prince.

Reuss-Schleiz.—Government the same as that last mentioned.

Schaumburg-Lippe has a Diet; but all the executive and part of the legislative powers are in the hands of the prince.

Reuss-Greiz has a legislative body of twelve members, five of whom are nominated by the sovereign and nobility.

Hamburg, Lubeck, and Bremen, are states and free cities, but under the German Empire.

Alsace-Lorraine, has adopted the constitution of the German Empire.

Great Britain.—A limited monarchy, with one Chamber representing the nobility and another the great mass of the people. The Queen rules through ministers responsible to Parliament for their acts.

Italy.—The executive power is in the hands of the sovereign, who exercises it through responsible ministers, and who exercises the legislative power conjointly with the Parliament.

Montenegro.—A limited monarchy resting on a patriarchal foundation.

Netherlands.—The whole legislative authority is vested in a Parliament. The king has full veto power, but he seldom or never uses it.

Portugal.—The constitution recognises four powers in the state—the legislative, judicial, executive, and moderatory, the last of which is vested in the sovereign.

Roumania has universal suffrage, with the legislative power vested in a Parliament and the executive in seven ministers. The prince has a suspensive veto over the laws passed in the Chamber of Deputies.

Sweden.—The king must belong to the Lutheran Church; he possesses legislative power in matters political, but in all other respects the Diet acts with him.

Norway.—The whole legislative power is vested in the Storthing, or Great Court, which represents the sovereign people. The king has the command of the land and sea forces. He may exercise the royal veto twice, but after that he is powerless to restrain any act from becoming a law of the land.

India is generally under the control of England, although many of the native governments are mainly despotic.

Egypt.—The administration is at present carried on under foreign supervision, chiefly of England.

Servia.—The executive power is vested in the prince assisted by a council responsible to the National Assembly.

Spain.—The executive rests in the king, and the power to make laws in the Cortes and the king.

THE GREAT CHURCH BUILDINGS OF HISTORY.

CATHEDRALS OF ENGLAND.

Canterbury (Church of England): 545 feet long, 170 feet broad, 230 feet high; founded 1070 A.D., finished 1130 A.D. This cathedral occupies the site of a Roman church, attributed to King Lucius, which was burned 1067 A.D. It was dedicated by Archbishop William, 1130, in the presence of the kings Henry of England and David of Scotland. Present income £15,000.

Bangor (Church of England): 223 feet long, 96 feet broad, 60 feet high; founded 1096 A.D., finished 1130 A.D. Occupies the site of a cathedral founded about 525 A.D.; destroyed by the English 1071, rebuilt 1102, destroyed by fire 1402. Present income £4,200.

Bristol (Church of England): 203 feet long, 127 feet broad, 133 feet high; founded 1142 A.D., finished 1170 A.D. Founded by the Abbot Robert Fitzharding; has a fine Norman gateway; the nave added recently has cost £40,000.

Carlisle (Church of England): 242 feet long, 130 feet broad, 123 feet high; founded 1092 A.D., finished 1130 A.D. Founded by William Rufus, dedicated by Henry I. 1101, made the cathedral church of the new diocese 1133; the nave destroyed by fire 1292, restored 1853. Present income £4,500.

Chester (Church of England): 375 feet long, 200 feet broad, 127 feet high; founded 1128 A.D., finished 1216 A.D. It was originally the Abbey of St. Werburgh, built for the Benedictines, 1095, by Hugh Lupus, assisted by St. Anselm; Henry VIII. made it the cathedral of the diocese 1541; the structure is Gothic.

Chichester (Church of England): 407 feet long, 151 feet broad, 300 feet high; founded 1082 A.D., finished 1204 A.D. Founded by Bishop Seffrid II. upon the site of that of Bishop Ralph, which was burned 1148. The nave is remarkable for having five aisles. The central tower fell 1861, and was rebuilt. Present income £4,200.

Durham (Church of England): 502 feet long, 194 feet broad, 210 feet high; founded 1093 A.D., finished 1480 A.D. A church was built on the site of the cathedral at the end of the 10th century. In the chapel of the Nine Altars are the remains of St. Cuthbert, brought to light 1827. Founded by William de Carileph; built in the Norman style. The total revenue of the dean and chapter during the seven years ending 1834 amounted to £36,937 a year. Since 1834 the income of the bishop has been fixed at £8,000 per annum.

Ely (Church of England): 516 feet long, 190 feet broad, 266 feet high; founded 1082 A.D., finished 1337 A.D. In 1107 Ely was erected into a bishopric by Henry I., and converted into a cathedral by Henry VIII. The architecture is Norman and Early English. It has lately been restored, costing £60,000. Present income £5,500.

Exeter (Church of England): 408 feet long, 155 feet broad, 153 feet high; founded 1112 A.D., finished 1478 A.D. It is a cruciform structure; contains the Great Tom of Exeter, or Peter's Bell, weighing 12,500 lbs. It was restored 1870-77. Present income £4,200.

Gloucester (Church of England): 427 feet long, 154 feet broad, 223 feet high; founded 1088 A.D., finished 1457 A.D. Formerly a Benedictine abbey; converted into a cathedral 1541; lately restored, costing £66,000; architecture, Norman and Gothic. Present income £5,000.

Hereford (Church of England): 350 feet long, 174 feet broad, 160 feet high; founded 1079 A.D., finished 1115 A.D. The architecture is Norman. The west front fell in 1786, and was rebuilt in an incongruous style, but the rest of the building has recently being restored in the best manner. Present income £4,200.

Lichfield (Church of England): 410 feet long, 177 feet broad, 252 feet high; founded 1200 A.D., finished 1325 A.D. This cathedral was greatly injured during the civil wars, but restored 1661. The architecture is Early English—remarkable for its great central and two western towers. Present income £4,500.

Lincoln (Church of England): 524 feet long, 242 feet broad, 300 feet high; founded 1127 A.D., finished 1200 A.D. The original cathedral founded by William I. 1086, burned down 1126, and was rebuilt by Bishop Alexander and Bishop Hugh of Burgundy. The bell, "Great Tom of Lincoln," weighs 4 tons 80 lbs. Present income £5,000.

London—St. Paul's—(Church of England): 514 feet long, 286 feet broad, 404 feet high; founded 1675 A.D., finished 1710 A.D. Built by Sir Christopher Wren, costing £748,000, in the form of a Latin cross. The architectural elevation is partly Corinthian. It is fifth in size of the great churches of Europe, being smaller than St. Peter's, and the cathedrals of Florence, Milan, and Amiens.

London—Westminster Abbey—(Church of England): 530 feet long, 220 feet broad, 225 feet high; founded 1050 A.D., finished 1065 A.D. Built in the form of an irregular cross, chapel of Henry VII., founded 1503, choir injured by fire 1803, restored between 1809 and 1822 by Benjamin Wyatt, costing £42,000; 800th anniversary celebrated 1865, mission sermon delivered by Max Müller 1873, when Dean Stanley asserted his right to allow a layman to preach there.

Norwich (Church of England): 415 feet long, 200 feet broad, 309 feet high; founded 1096 A.D., finished 1135 A.D. Founded by Bishop Herbert Losinga; Norman architecture. There are large cloisters on the south side. Present income £4,500.

Peterborough (Church of England): 480 feet long, 198 feet broad, 448 feet high; founded 1118 A.D., finished 1528 A.D. The cathedral is in the form of a cross; architecture, Norman and Early English. Present income £4,500.

Rochester (Church of England): 383 feet long, 170 feet broad, 156 feet high; founded 1077 A.D., finished 1130 A.D. Founded by Bishop Gundulph on the site of an ancient edifice; architecture, Norman and Early English. Present income £5,000.

Salisbury (Church of England): 474 feet long, 230 feet broad, 404 feet high; founded 1220 A.D., finished 1258 A.D. This cathedral is of the Early English style, in the form of a double cross; founded by Bishop Poore; cost 40,000 marks. Present income £5,000.

Wells (Church of England): 415 feet long, 155 feet broad, 165 feet high; founded 1206 A.D., finished 1465 A.D. A cathedral was built 923, but the present building was founded 1206 by Bishop Joceline; architecture, Early English. Present income £5,000.

Winchester (Church of England): 556 feet long, 230 feet broad, 140 feet high; founded 1070 A.D., finished 1097 A.D. Founded on the site of a former church by Bishop Walkelin; architecture, Norman and Early English. Present income £10,500.

Worcester (Church of England): 425 feet long, 145 feet broad, 193 feet high; founded 1084 A.D., finished 1281 A.D. A cathedral built 983, was destroyed by fire, and the present one founded 1084 by Bishop Wulfstan; architecture, Early English; restored recently, costing £60,000. Present income £5,000.

York (Church of England): 524 feet long, 250 feet broad, 200 feet high; founded 1291 A.D., finished 1331 A.D. A former cathedral was burned 1069 and 1137, and the nave of the present building was founded by John le Romayne 1291, damaged by fire 1829, again 1840; repaired, costing £100,000; architecture, Gothic. Present income £10,000.

CATHEDRALS OF SCOTLAND AND IRELAND.

Edinburgh—St. Giles—(Church of Scotland): 206 feet long, 161 feet high; founded 1359. It is first mentioned in a charter of David II.; retains much of its ancient Gothic work; became a collegiate church 1446. James VI. delivered his farewell address in this cathedral 1603.

Glasgow (Church of Scotland): 319 feet long, 63 feet broad, 225 feet high; founded 1192 A.D., finished 1197 A.D. This cathedral is said to be the finest Gothic building in Scotland; built by David I. on the site of a cathedral erected 1133, which was burned; consecrated 1197, but not completed till the present century.

Dublin—St. Patrick—(Anglican Church): 300 feet long, 130 feet broad, 226 feet high; founded 1190 A.D. This cathedral was restored 1865, costing £350,000, defrayed by Sir B. L. Guinness. The installations of the Knights of St. Patrick were first held in 1783.

CATHEDRALS OF GERMANY, BELGIUM, AND FRANCE.

Cologne (Catholic): 511 feet long, 231 feet broad, 501 feet high; founded 1248 A.D., finished 1880 A.D. The building of the cathedral was suspended 1509, but it was continued by the kings of Prussia since 1842; 600th anniversary celebrated 1848; £400,000 expended since 1842. It is considered one of the best Gothic structures in Europe.

Dantzig—Marienkirche—(Catholic): 358 feet long, 112 feet broad, 230 feet high; founded 1343 A.D., finished 1503 A.D. The cathedral contains the celebrated picture of "The Last Judgment." The vaulted roof is 98 feet high, supported by twenty-six brick pillars. It is built of brick. The whole area is 42,000 feet.

Strasburg (Catholic): 357 feet long, 150 feet broad, 466 feet high; founded 1015 A.D., finished 1601 A.D. The cathedral was designed by Erwin of Steinbach, and completed by John Hultz; its spire is the highest in the world. Injured by shells during the Franco-German war of 1870, but since repaired; famous for its wonderful clock;, architecture, Gothic.

Antwerp—Notre Dame—(Catholic): 390 feet long, 250 feet broad, 403 feet high; founded 1352 A.D., finished 1411 A.D. It was sacked 1566; contains Rubens' "Descent from the Cross;" architecture, Gothic.

Rheims (Catholic): 466 feet long, 160 feet broad, 144 feet high; founded 1211 A.D., finished 1430 A.D. The cathedral is of Gothic architecture, but the towers of the original design have not been completed. The French kings were crowned here for many centuries, the last being Charles X.

Amiens—Notre Dame—(Catholic): 469 feet long, 182 feet broad, 422 feet high; founded 1220 A.D., finished 1288 A.D. The cathedral was commenced by Robert de Luzarches, and completed by Thomas and Regnault de Cormont; architecture, Gothic.

Paris — Notre Dame — (Catholic): 390 feet long, 144 feet broad, 224 feet high; founded 1163 A.D., finished 1420 A.D. Founded by Pope Alexander III., though a church on the present site had been built 365 A.D.; suffered during the Revolution, but was repaired by Napoleon I. The pillars of the nave are 4 feet in diameter, resting on gravelled beds 18 feet below the surface. The organ is 45 feet high, 36 feet wide, with 3,484 pipes; the architecture is Gothic, covers 64,108 square feet.

CATHEDRALS OF ITALY AND SPAIN.

Rome — St. Peter's — (Catholic): 613½ feet long, 446½ feet broad, 448 feet high; founded 1503 A.D., finished 1626 A.D. The cathedral occupies the site of a Basilica built by Constantine 306; founded by Julius II., dedicated by Urban VIII. 1626. Its erection was carried on by twelve architects, among whom were Bramante, Raphael, Michael Angelo, and Maderno; the plan is in the form of a Latin cross. The annual cost of keeping the church in repair is 30,000 scudi.

Milan—Duomo—(Catholic): 486 feet long, 252 feet broad, 355 feet high; founded 1387 A.D. Founded by Giovanni Galeazzo Visconti. The ground plan is a Latin cross, terminated by an apsis; the exterior has niches for 4,500 statues, of which 3,400 are completed; architecture, Gothic.

Florence—Duomo—(Catholic): 500 feet long, 306 feet broad, 388 feet high; founded 1298 A.D., finished 1444 A.D. The original design was by Arnolfo, completed by Brunelleschi; architecture, Italian-Gothic; covers 84,802 square feet.

Seville (Catholic): 431 feet long, 315 feet broad, 350 feet high; founded 1349 A.D., finished 1519 A.D. This cathedral is of the Spanish-Gothic style, and is superbly decorated. Attached to it is the remarkable tower, the Giralda, 350 feet high. It has one of the largest organs in the world, and paintings by Murillo, Vargas, the Herreras, etc.

CATHEDRALS OF AMERICA.

Philadelphia—St. Peter and St. Paul—(Catholic): 216 feet long, 136 feet broad, 210 feet high; founded 1846, finished 1862. The cathedral is built of red sandstone, in the Roman-Corinthian style, from designs by Le Brun. It has a fine organ, frescoes, and an altarpiece by Brumidi.

Baltimore (Catholic): 190 feet long, 177 feet broad, 127 feet high; founded 1806, finished 1865. It is built of granite, in the form of a cross, surmounted by a lofty dome and two bell towers. It has a large organ of 6,000 pipes and 36 stops, a painting presented by Louis XVI. and one presented by Charles X. of France.

New York—St. Patrick's—(Catholic): 332 feet long, 174 feet broad, 328 feet high; founded 1858. It was projected by Archbishop Hughes, who laid the cornerstone August 15th, 1858. It is of white marble, in the decorated Gothic style. The two beautiful spires were completed 1889.

Garden City, L.I. (Protestant Episcopal): 188 feet long, 108 feet broad, 219 feet high; founded 1877, dedicated 1885. This cathedral is a memorial church to A. T. Stewart, erected by his wife, Cornelia M. Stewart. The architect is Henry G. Harrison; architecture, Gothic of the thirteenth century. The gargoyles are imitations of American flowers, the crypt mausoleum has forty-two columns of precious marbles, Vermont statuary marble and Belleville (N.J.) stone used for construction. Bishop Littlejohn; diocese, Long Island. Cost £120,000.

Salt Lake City (Mormon Temple): 250 feet long, 150 feet broad, roof 65 feet high; founded 1853.

Montreal—Notre Dame—(Catholic): 255 feet long, 135 feet broad, 220 feet high; founded 1824, finished 1829. It is built in the Gothic style of thirteenth century. It has two towers, each 220 feet high, one of which contains a chime of bells, and the other a single bell, the "Gros Bourdon," weighing 29,400 lbs. Cost of the cathedral, £80,000.

Mexico (Catholic): 500 feet long, 420 feet broad; founded 1573, finished 1667. This cathedral is built in an incongruous mixture of styles; contains a magnificent interior, with costly altars, statuary, and painting. Cost of the cathedral, £500,000.

Lima (Catholic): 320 feet long, 180 feet broad, 220 feet high; founded 1535, finished 1625. The cathedral of Lima is a massive stone structure, the façade painted yellow, with lath and plaster towers at each angle. It was founded by Pizarro; nearly destroyed by an earthquake 1746, but rebuilt by the viceroy, Count Superunda. Cost £120,000.

Compensation of the World's Lawmakers.—In Belgium each member of the Chamber of Representatives receives 200 florins, or £16 15*s.*, per month, or for the session of eight months, £134. In Denmark the members of the Landsthing and the Folkething are paid the same pay, 15*s.* per day. The average number of working days in a session is 145; the total amount for the same is £113 15*s.* In Portugal peers and deputies receive an annual stipend of £67. In France senators and deputies each get 19,000 francs, or £350, a year, the colonial representatives getting, in addition, their travelling expenses. In Sweden the members of the Diet receive 1,200 rix dollars, equal to £65 14*s.*, for a session of four months, and their travelling expenses. Members of both Chambers are fined 10 rix dollars, or 11*s.*, a day if they do not attend. In Switzerland members of the National Council receive 10*s.* per day, which is paid out of the Federal Treasury. Members of the State Councils are paid by the cantons, and their salaries range from 6*s.* to 10*s.* per day. In the United States representatives and delegates each receive £1,000 per year, and their travelling expenses at the rate of 5*d.* per mile. In Norway the members of the Storthing receive 13*s.* 4*d.* a day while it is sitting, which is usually about twelve weeks. In Italy neither senators nor deputies are paid, but they get free passes over all the railways in the kingdom, and some other concessions as to taxes and patronage, a most objectionable mode of payment, and long since condemned in some of the countries where similar privileges used to be conceded to legislators. In Spain the members are not paid. In Greece the senators get £20 per month, and members of the Representative Chamber £10 per month. In all the local Legislatures in Germany the members, with one or two exceptions, are paid, the salaries averaging in Prussia about 9*s.* per day, and in Austria 20*s.* The members of Parliament of Great Britain, as is well known, receive no pay and have no direct patronage. Were the members of the House of Lords paid at the same rate as American Congressmen, their salaries would amount to about £518,000, and the members of the House of Commons would absorb about £670,000.

THE ART GALLERIES OF THE WORLD.

Giving an alphabetical list of the various cities in different countries where art galleries have been established; supplemented by valuable descriptive notes of the art galleries in Europe and America, and the celebrated paintings and statuary they contain.

ITALY.

Bergamo, Accademia Carrara.
Bologna, Pinacoteca.
Brescia, Museo Civico.
Ferrara, Atteneo.
Florence, Accademia delle Belle Arti.
Florence, Pitti Palace
Florence, Royal Gallery of the Uffizi.
Genoa, Palazzo Brignoli.
Genoa, Palazzo Pallasicini.
Mantua, Palazzo del Te.
Mantua, Palazzo Imperiale.
Mantua, Costello di Corti.
Milan, Ambrosiana.
Milan, Brera.
Modena, Galleria Estense.
Naples, National Museum.
Padua, Museo Civico.
Parma, Pinacoteca.
Perugia, Pinacoteca.
Perugia, Sala del Cambio.
Pisa, Accademia.
Pisa, Campo Santo.
Rome, Accademia di San Luca.
Rome, Villa Albani.
Rome, Barberini Palace.
Rome, Borghese Palace.
Rome, Gallery of the Capitol.
Rome, Colonna Palace.
Rome, Corsini Palace.
Rome, Doria Palace.
Rome, Farnese Palace.
Rome, Villa Farnesina.
Rome, Villa Ludovisi.
Rome, Royal Palace of the Quirinal.
Rome, Rospigliosi Palace.
Rome, Sciarra Palace.
Rome, Spada Palace.
Rome, Vatican Collection.
Siena, Galleria delle Belle Arti.
Siena, Palazzo Pubblico.
Turin, Royal Gallery of Paintings.
Urbino, Museum.
Venice, Accademia delle Belle Arti.
Venice, Ducal Palace.
Venice, Scuola di San Rocco.
Verona, Pinacoteca.
Vicenza, Museum.

GERMANY.

Augsburg, Gallery of Pictures.
Berlin, Royal Picture Gallery.
Cassel, Gallery of Pictures.
Cologne, Museum Wallraf-Richartz.
Darmstadt, Gallery of Pictures.
Dresden, Royal Gallery of Pictures.
Frankfort, Städel Picture Gallery.
Munich, Pinacothek.
Munich, Glyptothek.
Nürnberg, Picture Gallery.
Stuttgart, Royal Gallery of Pictures.

FRANCE.

Bordeaux, Museum.
Caen, Museum in the Hotel de Ville.
Lille, Museum.
Lyons, Museum.
Marseilles, Gallery of Pictures.
Montpellier, Musei Fabre.
Paris, Louvre.

AUSTRIA.

Vienna, Imperial Picture Gallery.
Vienna, Gallery of Prince Lichtenstein.

BELGIUM.

Antwerp, Museum.
Bruges, Academy of Pictures.
Bruges, Hospital of St. John.
Brussels, Musée National.

SPAIN.

Madrid, Academia de San Fernando.
Madrid, Royal Museum.
Seville, Museum.
Valencia, Museum.

HOLLAND.

Amsterdam, Museum of the Tripenhius.
Amsterdam, Vander Hoop Museum.
Amsterdam, Six van Hillegrom Collection.
Amsterdam, Van Loon Collection.
Amsterdam, Townhall.
Haarlem, Townhall.
Haarlem, Hoffe van Berestyn.
Hague, Royal Museum.
Hague, Townhall.
Hague, Steengracht Collection.
Leyden, Stedelyk Museum.
Rotterdam, Museum.

ENGLAND.

Dulwich, Gallery of Pictures.
London, National Gallery.
South Kensington Museum.
British Museum.
Hampton Court, Collection in the Palace.

RUSSIA.

St. Petersburg, Academy of Arts.

AMERICA.

Boston, Athenæum.
Brooklyn, Historical Society.
New York, Historical Society.
New York, Metropolitan Museum of Art.
New York, Lenox Library.
New York, National Academy of Design.
New York, Union League.
Philadelphia, Academy of Fine Arts.
Philadelphia, Union League.
Providence, Athenæum.
St. Louis, Fine Art Museum.
Washington, Corcoran Art Gallery.

ITALY.

The Pinacoteca, Bologna.—This is one of the finest picture galleries in Italy. It comprises eight saloons. The principal gems in this collection are: Raphael's "St. Cecilia in Ecstasies;" "The Death of St. Peter," by Domenichino; "Samson destroying the Philistines," by Guido; the "Madonna della Pieta," by Guido; the "Baptism of Christ," by Albano; the "Martyrdom of

St. Agnes," by Domenichino; the "Massacre of the Innocents," by Guido; the "Madonna, with St. Augustine and other Saints," by Francia; the "Apparition of the Saviour to Mary Magdalene under the Figure of a Gardener," by Calvert.

Museo Civico, Brescia.—The building and collections of this gallery were presented to Brescia by Count Torsi. The most valuable of its contents is a celebrated work of Raphael, representing our Saviour crowned with thorns, for which Count Torsi paid 24,000 francs. It formerly belonged to the Mosea family of Pesaro. The paintings, busts, etc., are admirably arranged, and occupy ten different rooms. There are several other galleries containing paintings of interest.

Accademia delle belle Arti, Florence.—This gallery contains a fine progressive series of paintings, from Cimabue to the highest perfection in the art. The entrance hall contains busts of great painters and bas reliefs in terra-cotta by Luca della Robbia. The hall of the great pictures contains some 120 specimens. There is a hall of ancient pictures, artists unknown, and a hall of small pictures from the fourteenth to the seventeenth century. The hall of cartoons contains some fine designs by Raphael and other great masters, and, on an upper floor, six rooms contain modern Italian pictures.

Pitti Palace, Florence.—This collection of pictures consists of the principal part of the collections of the Cardinals Leopoldo and Carlo de Medici. Ferdinand II. made many important additions to it, by purchasing the best paintings then existing in the Tuscan churches. The number of pictures exceeds 500, and the gallery consists of a series of splendid apartments, the ceilings of the first five of which were painted in fresco by Pietro da Cortona in 1640.

The Royal Gallery of the Uffizi, Florence.—The collection of paintings in this gallery is, without doubt, the richest and most varied in the world, with the exception of the Royal Gallery at Madrid, although it is not so extensive as the galleries of the Louvre, Dresden, or the Belvidere at Vienna. It contains a fine collection of the Tuscan school, and includes several of Raphael's and Titian's masterpieces. The greatest treasures of the gallery are contained in one room called the Tribune, where are also placed the most celebrated statues of antiquity. A suite of small rooms contains some admirable specimens of other schools of painting. In one of the largest rooms is the famous group of the Niobe; two others are filled with portraits of artists, chiefly by their own hands, and there are besides valuable collections of busts, coins, medals, gems, engravings, and drawings by the old masters.

Palazzo Brignole, Genoa.—This is considered the finest collection of paintings in Genoa, containing the works of Titian, Guido, Paul Veronese, Louis Caracci, Carlo Dolci, Paris Bordone, Vandyck, Rubens, Guercino, Caravaggio, and Giordano. There is also a model of a monument, in bronze and marble, to Columbus, executed at the individual expense of the Marquis Brignoli.

The Palazzo Pallavicini of Genoa possesses the second best collection of paintings; they are principally works of the best masters.

Palazzo del Te, Mantua.—The Palazzo del Te is a short distance from Mantua; it is from the design of Giulio Romano, who also acted as sculptor, and bestowed upon the paintings some of his most exquisite touches. The Hall of Giants is an immense study, so varied are the figures therein represented.

Palazzo Imperiale, Mantua.—This palace was begun by Buonacolsi in 1302; it contains 500 rooms, whose choicest embellishment consists in the glorious paintings and exquisite designs of the great Mantuan artist Giulio Romano.

Costello di Corte, Mantua.—This palace was erected by Francesco Gonsago IV., and contains some ancient frescoes which are very rich.

Ambrosiana, Milan. This institution was founded by Cardinal Frederigo Borromeo, archbishop of Milan: the gallery and museum possess a great many paintings, statues, drawings, etc. The principal room is adorned with a frieze of portraits of distinguished individuals: it also contains busts of Lord Byron, Thorwaldsen, etc.

Brera, Milan.—The Brera has a noble collection of paintings by most of the artists of Italy. In the centre of the court there is a fine statue of Napoleon I., by Canova.

National Museum, Naples.—The collections in the National Museum, comprising 1,600 frescoes found at Herculaneum and Pompeii, are the chief glory of Naples. The gallery of paintings was re-arranged 1866-67. It contains 500 works, mostly gems of the great masters; while the Neapolitan school can nowhere be studied so well as here.

Pinacoteca, Parma.—The picture gallery of Parma is in the ducal palace, which contains some fine pictures by David, "The Toilette," and a splendid portrait of Maria Louise. The gallery contains four of Correggio's masterpieces. The principal is his "Madonna, with the Infant Saviour," "St. Madeleine," and "St. Jerome." The last is known in Italy under the name of "Il Giomio"—"The Day"—in contrast to his masterpiece in the gallery at Dresden, which is "The Night." There are also many other valuable paintings by Caracci, F. Francia, and Vandyck. In the sculpture gallery there are several valuable antiques found in the ruins of Velleia.

Accademia delle Belle Arti, Pisa.—This gallery was founded by Napoleon in 1812. The paintings are mostly of the Pisan and early Florentine schools.

Campo Santo, Pisa.—This "Museum of Tombs" contains may very interesting specimens of sepulchral monuments, statues, and very old paintings. The walls are covered with frescoes representing Scripture subjects by many of the old masters. The earth which surrounds this edifice was brought from Jerusalem in fifty galleys as long ago as 1228.

Accademia di San Luca, Rome.—This gallery has one of the best collections in Rome, though small, and contains a most interesting landscape by Titian; also one of Claude's *chef-d'œuvres*, "A Seaport."

Villa Albani, Rome.—The Villa Albani was built in the middle of the last century by Cardinal Alessandro Albani. It is rich in works of art, and the most important specimens are to be found in the Casino and Coffeehouse. Among the statues remarkable are those of Julius Cæsar, Agrippina, Augustus, and Faustina; busts of Alexander the Great, Scipio Africanus, Hannibal, Homer, and Epicurus; bas-reliefs of Antonius crowned with the lotus-flower, and Diogenes in a large jar receiving Alexander; and the bronze Apollo Sanrocthonos, supposed to be the original by Praxiteles.

Barberini Palace, Rome.—Among other pictures in this palace is the famous so-called portrait of Beatrice Cenci.

Borghese Palace, Rome.—The gallery of this palace contains over 800 paintings. They are arranged in twelve different rooms. Among these are Raphael's "Entombment of Christ," "Cæsar Borgia," and "Julius II.;" "The Saviour," by Leonardo da Vinci; "Sacred and Profane Love," "The Three Graces," "Samson," "Holy Family, with St. John," by Titian; "St. Anthony Preaching to the Fishes," by Paul Veronese; "Chase of Diana," by Domenichino; "Venus and Cupid," by Andrea del Sarto; and magnificent works of many other artists are here displayed.

The Capitol Gallery, Rome.—This gallery was founded by Benedict XIV. in the beginning of the eighteenth century. Although more numerous than the Vatican gallery, it contains few important works.

Colonna Palace, Rome.—This palace was the residence of Julius II., and afterwards of San Carlo, when Cardinal Borromeo. The picture-gallery was at one time the most celebrated in Rome, and still contains some fine works.

Doria Palace, Rome.—This gallery contains about 800 pictures. Among the finest specimens are the following: Raphael—portraits of Baldo and Bartolo; Titian—"Sacrifice of Isaac;" portrait of Titian's wife; Leonardo da Vinci—a lovely portrait of Joanna II. of Aragon, Queen of Naples; Claude—"Mercury Stealing the Cattle of Apollo," the celebrated Molivo, "Flight into Egypt;" Guercino, "The Prodigal Son," "Endymion," "St. Agnes;" Annibal Carracci—"The Assumption," "Flight into Egypt," "The Nativity," "Adoration of the Magi," and the "Entombment of our Saviour."

Farnese Palace, Rome.—This palace is the property of the ex-King of Naples, and contains the frescoes of Caracci, his finest work, which occupied his own time and that of his pupils for eight years.

Villa Ludovisi, Rome.—This villa contains a collection of ancient sculpture. The Casino, on the left, was built from designs of Domenichino, and contains some fine antique statues. The principal one is that of "Mars." The "Aurora" of Guercino and the frescoes of Domenichino are the principal attractions.

Rospigliosi Palace, Rome.—This palace was originally erected by Cardinal Scipio Borghese. On the ceiling of one of the galleries belonging to this palace is the celebrated fresco of Guido, considered his masterpiece.

Vatican Gallery, Rome.—The Vatican Gallery does not contain fifty pictures, but it has more real treasures of art than any other collection in the world. The "Transfiguration," "The Madonna di Foligno," and "The Communion of St. Jerome," are a gallery in themselves. The pictures are arranged in four rooms, built by Pius VI., and disposed as we now see them by Gregory XVI., under the direction of Camiccini.

Galleria delle belle Arti, Siena.—This gallery contains a valuable collection of pictures of the old Sienese school.

Royal Galery of Paintings, Turin.—This gallery contains a fine collection of over 500 paintings, distributed in fifteen rooms. Among the most valuable are "The Madonna della Tenda," on wood, by Raphael; "Pharoah's Daughter finding Moses," by Paul Veronese, into which painting he has introduced his own portrait: "Mary Magdalene Washing the Feet of Our Saviour at the Table of the Pharisee;" allegorical painting of the four elements, "Earth, Air, Fire, and Water;" "Holy Family," by Vandyck. The paintings of "The Battles," by Hugtenburgh, are exceedingly interesting.

Accademia delle belle Arti, Venice.—In the *Salla dell' Assumta* of this gallery is the great painting by Titian, "The Assumption of the Virgin," wherein he has displayed his greatest talents in colouring and arrangement of drapery. It also contains "The Visitation of St. Elizabeth" and "The Deposition," by the same artist. It is especially rich in works of the Venetian school.

Ducal Palace, Venice.—This palace contains, among other paintings, the impressive and magnificent painting of "Paradise." It is immensely large—84 feet in width and 33½ feet in height—and painted by Tintoretto: also "The Ambassadors Meeting Frederick II. at Pavia, praying to him for Restoration of Peace to Italy and the Church;" "The Second Conquest of Constantinople by the Crusaders and Venetians in 1204;" "The Great Naval Battle which took place in Istria at the time the Imperial Fleet was defeated, and Otho, the Emperor's Son, taken Prisoner;" "Pope Alexander III. Discovered Secreted in the Convent of La Carita, when Escaping from Frederick II. in 1177;" "The Pope Presenting the Lighted Taper to the Doge;" "The Doge Departing from Venice, and is Receiving the Blessing of the Pope;" "The Emperor Submitting to the Pope;" "Alexis Comnenus, Son of the Dethroned Emperor of Constantinople, imploring the Venetians to aid him in his Father's Behalf;" "The Return of the Doge Contarini, after the Victory gained over the Genoese at Chioggia in 1378 by the Venetians;" and Paul Veronese's painting of "Venice amid the Clouds crowned with Glory," near the great picture of "Paradise."

Pinacoteca, Verona.—The picture-gallery of Verona contains numerous specimens of Paul Veronese, Pordenone, Ira Bartolomeo, Moretto, and Tintoretto.

Museum, Vicenza.—The museum in the Palazzo Chiericati contains some very good pictures. In the large hall is the "Supper of St. Gregory," by Paul Veronese, which was once very magnificent, but was most shamefully abused in 1848 by the Austrian soldiers.

GERMANY.

Gallery of Pictures, Augsburg.—The gallery of paintings situated in the old convent of St. Catherine contains a good collection of the old German masters.

Burg Kenair, Zeitblom, etc. There are several pictures of Hans Holbein, the elder.

Royal Picture Gallery, Berlin.—This collection has about 1,500 paintings. These are divided into three classes—the Italian, French, and Spanish, the Dutch, Flemish, and German, and the Byzantine, Italian, Dutch, and German pictures down to the end of the fifteenth century—each of the classes being chronologically arranged. In 1874 the gallery was enriched by the valuable pictures of the Suermondt gallery.

Gallery of Pictures, Cassel.—This gallery contains numerous *chefs d'œuvre*, the most of which, before 1866, were not accessible to the public. Among these are fine specimens of Holbein, Cranach, Dürer, Rembrandt, Vandyck, Rubens, Mabuse, Teniers, Metzu, Wouvermans, P. Potter, Ruysdael, Titian, Guido Reni, C. Dolci, the Caraccis, Veronese, Murillo, and many other painters.

Museum Wallraf-Richartz, Cologne.—This handsome Gothic edifice (with its contents) owes its existence to the munificence of two citizens of Cologne. The building was constructed in 1861 by M. Richartz at an expense of £30,000, and its contents are the legacy of M. Wallraf. They consist of objects of Roman antiquities, pictures of the old school of Cologne, some 400 in number, consisting of specimens of Rubens, Holbein, Cranach, Dürer, and Vandyck. One of the wings is devoted to modern paintings; among these are "Galileo in Prison," by Piloty; "The Captive Jews at Babylon," by Bendemann; there are also samples of Begas, Camphausen, Scheuren, Plockhorst, and others. The exterior is decorated with statues of noted citizens, and the staircase with frescoes by Steinle; on the ground floor there are three rooms devoted to an exposition of pictures by Cologne artists.

Gallery of Pictures, Darmstadt.—This gallery contains 700 paintings. Among them are a Raphael, "St. John in the Wilderness;" a "Sleeping Venus," by Titian; a "David and Nathan," by Domenichino; Rembrandt, a portrait of his second wife; "The Interior of a Stable," by Paul Potter; a "Virgin and Child," by Holbein; "Diana Returning from the Chase," by Rubens; "A Hunt," by Snyders; several Dutch landscapes by Achenbach.

Royal Gallery of Pictures, Dresden.—The art gallery of Dresden was founded by Augustus I., and increased by his successors at great cost. It contains about 2,500 pictures, being especially rich in specimens of the Italian, Dutch, and Flemish schools. Among the Italian masters represented are Raphael, Titian, Correggio, Leonardo da Vinci, Paolo Veronese, Andrea del Sarto, Giulio Romano, Annibale Caracci, Guido Reni, and Carlo Dolci. Of the Flemish and Dutch schools there are paintings by Rubens, Vandyck, Rembrandt, and Ruysdael, Wouvermans, Dow, Teniers, Ostade, Potter, etc. The French school is represented among others by Poussin and Claude. The gem of the collection is Raphael's "Madonna di San Sisto," for which a room is set apart. There is a special room for the Madonna of the younger Holbein. Other paintings with which the name of the gallery is generally associated are Correggio's "La Notte" and "Mary Magdalene;" Titian's "Tribute Money" and "Venus;" "The Adoration" and the "Marriage in Cana," by Paolo Veronese; Andrea del Sarto's "Abraham's Sacrifice;" Rembrandt's Portrait of Himself with his Wife sitting on his Knee; "Judgment of Paris" and "The Boar Hunt," by Rubens; Vandyck's "Charles I., his Queen and their Children." In separate compartments there are a number of crayon portraits, most of them by Rosalba Carura, and views of Dresden by Canaletto and other artists. Besides the picture gallery the museum includes a magnificent collection of engravings and drawings. There are upward of 350,000 specimens arranged in twelve classes, so as to mark the great epochs in the history of art. A collection of casts, likewise in the museum, is designed to display the progress of plastic art from the time of the Egyptians and Assyrians to modern ages. This collection was begun by Rafael Mengs, who secured casts of the most valuable antiques in Italy, some of which no longer exist.

Stadel Picture Gallery, Frankfort.—This academy of painting was named after its founder, a rich banker and citizen, who, in 1816, bequeathed £80,000, in addition to a large collection of pictures and engravings, for its foundation. Some of the modern pictures are very fine, particularly those by Dutch and Flemish masters. At the entrance are busts of Raphael and Albert Dürer. The rooms to the left on entering contain casts of antiques. Next the *Frescosaal*, on the ceiling of which is a fresco by Veit and Hessemer, representing the introduction of the fine arts into Germany. Here are casts of Ghiberti's bronze doors of the Baptistery at Florence. Among the Italian pictures are the four fathers of the Latin Church at the throne of the Virgin, by Moretto, which cost 35,000 florins.

The Pinacothek, Munich.—This gallery was begun in 1826 and opened in 1836. It is built after the design of Klenze, and is considered by many the most convenient and appropriate receptacle for paintings in Europe. The façade above the corridor is surmounted by a row of statues of twenty-five of the greatest painters, modelled by Schwanthaler. The number of paintings is 1,300, consisting of all the collections belonging to the King of Bavaria, including the galleries of Düsseldorf, Mannheim, Zweibrücken, and many other cabinets. They are arranged according to schools, in nine splendid halls, and twenty-three adjoining small cabinets.

The Glyptothek, Munich.—The Glyptothek Gallery of Sculpture at Munich is a very chaste and classical edifice of the Ionic order, erected by Klenze 1816—1830 for King Louis I., who, while Crown Prince, formed the very interesting and valuable collection deposited in it entirely at his own expense. The front is adorned with sculpture in six niches—Stand, Vulcan, Prometheus, and Dædalus. It has twelve halls, and the decorations of every apartment are adapted to its contents.

Nurnberg Picture Gallery.—This gallery is in an old Carthusian convent. It contains nearly two hundred pictures of the Flemish and German school.

Stuttgart Royal Gallery of Pictures.—This gallery contains some paintings of Murillo, Rubens, Guido, Paul

Veronese, Rembrandt, Velasquez, Titian, Zurbaran, Tintoretto, and others equally celebrated. The Museum of Fine Arts contains casts of the most celebrated works of ancient and modern sculpture, among which are casts of all the works of Thorwaldsen, presented by him in 1844.

FRANCE.

Museum in the Hotel de Ville, Caen.—This collection contains a "Marriage of the Virgin," by Perugino; "Melchizedec Offering Bread and Wine to Abraham," and a "Virgin and Saints," by Albert Dürer.

Museum, Lille.—This museum contains five or six rooms filled with paintings, of which the finest are a Magdalen and the Virgin and St. Francis, by Rubens; a Medea, by E. Delacroix; and several works by a native artist, De Veuez, born 1642. The museum also possesses a valuable collection of drawings, 1,300 in number, by the old Italian masters, among which are numbered several by Raphael, Michael Angelo, Fra Bartolomeo, etc.; also a bust in wax, attributed to Raphael. This collection was bequeathed to the town by Chevalier Wilar, a native of Lille, who passed many years in Rome.

Gallery of Pictures, Marseilles.—A new museum has been erected lately, and contains a collection of about 150 paintings, among which are a Perugino, Rubens, and Andrea del Sarto.

Musée Fabre, Montpelier.—The Musée Fabre was founded by Fabre, from whom it takes its name; he was a great friend of Alfieri, the Florentine poet and author, and of his wife, the Countess of Albany; here there is a portrait of Lorenzo de Medici, and the head of a young man, both by Raphael, with many other fine paintings, both by ancient and modern masters.

The Louvre, Paris.—The Louvre was originally a royal residence. Napoleon I. turned it into a museum, and deposited in it the finest collection of paintings, statues, and treasures of art known in the world. Many of those brought from Italy have since been restored to the rightful possessors. The magnificent buildings of the new Louvre, begun by Napoleon I. and completed by Napoleon III., were inaugurated 1857.

AUSTRIA.

Imperial Picture Gallery, Vienna.—This gallery ranks second only to that of Dresden in all Germany, and was built in 1724. It is very rich in the Italian and old German schools. The pictures, about eighteen hundred in number, are arranged according to schools, such as the Venetian, Roman, Florentine, Flemish, etc.

Gallery of Prince Lichtenstein, Vienna.—Among the most valuable of this collection are Raphael's, Correggio's, Titian's, Guido's, Domenichino's, and Giorgione's pictures; also several portraits by Vandyck and Gerard Douw.

BELGIUM.

Museum, Antwerp.—The old convent of the "Recollects" has been converted into a museum, in which is a magnificent collection of paintings, comprising the choicest specimens of the masters of the Flemish school, Vandyck, Jordaens, Rubens, Teniers, and others. It contains also the masterpiece of Vandyck, "The Crucifixion." There are two pictures by Rubens here which are considered by many as fully equal to his "Descent from the Cross" and "Elevation to the Cross" in the Cathedral; they are the "Crucifixion of Christ between the Two Thieves," and his "Dead Christ," who lies on a stone table, covered with straw.

Hospital of St. John, Bruges.—In this collection are a number of very fine paintings by Hans Memling. The most interesting of these are to be seen on the coffin in which the arm of St. Ursula is kept. On the sides are painted the different subjects from the story of this saint and her 11,000 virgins. There is also a "Holy Family," attributed to Vandyck.

Musée National, Brussels.—In this picture-gallery there are some very fine paintings, especially those purchased by the city at the King of Holland's sale. There are some six or seven by Rubens, all of which have been severely criticised by Sir Joshua Reynolds. They are considered far inferior to those by the same artist in Antwerp; there, however, his masterpieces exist.

SPAIN.

Academia de San Fernando, Madrid.—This gallery contains about three hundred pictures, several Murillos and Zurbarans being among the number.

Royal Museum, Madrid.—This gallery is said to contain more wealth in pictures than any other collection in Europe. In a chronological point of view, the museum of Madrid is inferior to the collection at the Louvre in Paris, or the Uffizi and Pitti Palace at Florence. But, considering it as a collection of masterpieces, it is superior to that of both places. It contains, besides specimens of many other famous painters, 10 of Claude, 22 of Vandyck, 16 of Guido, 46 of Murillo, 21 of N. Poussin, 10 of Raphael, 62 of Rubens, 52 of Teniers, 43 of Titian, 27 of Tintoretto, 62 of Velasquez, 24 of Paul Veronese, and 10 of Wouvermans. Of all these pictures the most wonderful are those of Velasquez.

Museum, Valencia.—The museum, which is in the old convent of Del Carmen, contains a number of very indifferent paintings; the principal are by the Raphael of the Spanish school, Vicente Joanes; his best picture, however, is in the Church of San Juan.

HOLLAND.

Museum of the Tripenhius, Amsterdam.—This museum contains over four hundred works, chiefly of the Flemish and Dutch schools, including the "Night Guard" of Rembrandt, and the "Banquet of the Civic Guard" by Van der Helst; besides nearly 4,000 engravings, and a magnificent numismatic collection, considered one of the finest in the world. Among the other collections of Amsterdam are those in the Van der Hoop Museum, Townhall, besides several private collections.

Royal Museum, Hague.—The chief attraction at the Hague is an unrivalled collection of paintings by the Dutch masters, in the National Museum, which occupies the former palace of Prince Maurice, an elegant building of the seventeenth century. The most valuable of this collection is the "Young Bull," by Paul Potter, a picture which occupies nearly the whole end of one of the rooms. This highly-prized work of art was carried off to Paris by order of Napoleon, and hung up in the Louvre, where it was considered the fourth in value in that collection, which is the largest in the world, though not the most valuable. This gallery contains also Poussin's "Venus Asleep," and Rembrandt's "Dr. Tulp."

Museum, Rotterdam.—This gallery contains about three hundred paintings, counting among the artists Rembrandt, Cuyp, Rubens, Albert Dürer, Ary Scheffer, and the two Wouvermans. Behind the museum is a fine bronze monument of Gysbert Kurel Van Hogendorf, erected in 1813 by Joseph Geefs.

ENGLAND.

Gallery of Pictures, Dulwich.—The pictures of this collection most widely known are the exquisite Murillos, and the choice specimens of the Dutch school.

Collection in the Palace, Hampton Court.—The celebrated cartoons of Raphael, which were formerly in the gallery of this palace, have been removed to the South Kensington Museum, but it still contains a valuable collection of pictures, including a number of fine specimens of the old masters, and a large collection of portraits of persons famous in English history.

National Gallery, London.—This collection began with the purchase by the British Government of the Angerstein collection of thirty-eight pictures, for £57,000, in 1824. Sir G. Beaumont, Mr. Holwell Carr, and many other gentlemen, as well as the British Institution, contributed many fine pictures, and the collection has since been greatly augmented by gifts and purchases. In 1865 the House of Commons voted £20,000 to buy land to enlarge the building. Of its pictures, 284 were presented, 256 bequeathed, and 313 were purchased at a cost of £254,527. In 1871 the Peel collection (70 pictures) was bought for £75,000.

RUSSIA.

Academy of Arts, St. Petersburg.—The present building was erected between the years 1765 and 1788. The lower floor of this building is devoted to sculpture; above are galleries appropriated to paintings, and on the second story a large collection of drawings illustrating the progress of architectural art, together with a well-lighted hall, destined for an annual exhibition of paintings, held in September.

AMERICA.

Athenæum, Boston.—The Boston Athenæum, founded 1804, is richly endowed, and occupies a building that cost £27,200. It has a fine gallery of paintings and another of sculpture. The American Academy of Arts and Sciences, founded 1780, has its library in this building.

Historical Society, Brooklyn.—The Long Island Historical Society is a handsome building in terra cotta, and possesses a valuable collection of paintings.

Historical Society, New York.—The New York Historical Society was founded in 1804, and contains the famous Abbott Egyptian collection, the Lenox Nineveh marbles, and one of the most extensive and finest galleries of paintings in the country. It is supported by a large membership of leading citizens.

Metropolitan Museum of Art, New York.—This institution was founded 1870, for the purpose of establishing a museum and library of art, and of encouraging and developing the study of the fine arts. In 1879 it was placed in a handsome building erected for it by the Park Department in the Central Park, at a cost of £100,000. The number of members of the corporation is limited to 250. It contains the Blodgett collection of Flemish, Dutch, and other paintings, the unique Cesnola collection of Cypriote archæological objects, the Avery collection of pottery, the Catherine Wolff collection of paintings, laces, etc., and numerous other articles of interest.

Lenox Library, New York.—This library, founded by James Lenox, was chartered in 1870. It contains a valuable collection of manuscripts, engravings, maps, statuary, paintings, drawings, and other works of art.

National Academy of Design, New York.—This institution, founded 1826, occupies a handsome building of gray and white marble and blue stone in Twenty-third Street. It has a good collection of paintings, and in spring and summer gives exhibitions of recent works of American artists. It also maintains free schools for advanced students in art.

Academy of Fine Arts, Philadelphia.—This academy, founded 1805, is devoted to the promotion of drawing, painting, and sculpture, maintains a free art-school, and possesses a fine collection of statues and pictures.

Union League, Philadelphia.—This club has a handsome building in the Renaissance style, and a fine collection of paintings and statuary.

Athenæum, Providence.—The Athenæum is a substantial granite building, and contains a collection of valuable paintings, among which are portraits by Allston and Sir Joshua Reynolds, and Malbone's masterpiece, "The Hours."

Corcoran Art Gallery, Washington.—The Corcoran Art Gallery is a large brick and brown-stone building in the Renaissance style, near the White House. It was founded by W. W. Corcoran, the banker, who gave it to the people, and presented it with his superb private art collection and an endowment fund of £180,000. It contains nearly two hundred paintings, most of them masterpieces; the finest collection of casts in the country, and among the marble statuary "The Greek Slave," by Powers, and "The Dying Napoleon," by Vela; the richest bronzes in America; and specimens of bric-à-brac, porcelain, and majolica ware.

PROVERBS AND PHRASES

FROM THE LATIN, FRENCH, ITALIAN, AND SPANISH,

FREQUENTLY OCCURRING IN ENGLISH BOOKS AND IN CONVERSATION, RENDERED INTO ENGLISH.

FROM THE LATIN.

Ab extra, From without.
Ab hoc et ab hac, From this and that; confusedly.
Ab inconvenienti, From the inconvenience.
Ab initio, From the beginning.
Ab origine, From the origin.
Ab ovo usque ad mala, From the egg to the apples; from beginning to end.
Absit invidia, All envy apart.
Abundat dulcibus vitis, He abounds with pleasant faults.
Ab uno disce omnes, From a single instance you may infer the whole.
Ab urbe condita, From the founding of the city.
A capite ad calcem, From head to foot.
Ac etiam, And also.
Acribus initis, incurioso fine, Alert in the beginning, negligent in the end.
Actum est de republica, It is all over with the commonwealth.
Ad arbitrium, At pleasure.
Ad captandum, To attract or please.
Ad captandum vulgus, To catch the rabble.
Ad Calendas Græcas, At the Greek Calends, *i.e.* never, as the Greeks had no Calends.
A deo et rege, From God and the king.
Ad eundem (sc. gradum), To the same in degree.
Ad finem, To the end.
Ad hominem, To the interests or passions of the man.
Adhuc sub judice lis est, The affair is not yet decided.
Ad infinitum, To infinity.
Ad inquirendum, For inquiry (a judicial writ).
Ad interim, In the meanwhile.
Ad libitum, At pleasure.
Ad nauseam, To disgust.
Ad referendum, To be further considered.
Ad valorem, According to the value.
Ægrescit medendo, The remedy is worse than the disease.
Æquam servare mentem, To preserve an equal mind.
Æquanimiter, With equanimity.
Æquo animo, With an equal mind.
Affirmatim, In the affirmative.
A fortiori, With stronger reason.
Agenda, Things to be done.
Alere flammam, To feed the flame.
Alias, Otherwise.
Alibi, Elsewhere.
Aliquando bonus dormitat Homerus, Even the good Homer sometimes nods.
Alitur vitium, vivitque tegendo, Vice thrives and lives by concealment.
Alma mater, A benign mother, generally applied to the University.
Alter ego, Another self.
Alter idem, Another same.
Alumni, Those who have received their education at a college.
A maximis ad minimis, From the greatest to the least.
A mensa et toro, From board and bed.
Amicus curiæ, A friend of the court.
Amicus humani generis, A friend of the human race.
Amor patriæ, Love of country.
Anglice, In English, or according to the English manner.
Anguis in herba, A snake in the grass.
Animo et fide, By courage and faith.
Animus furandi, With felonious intent.
Anno domini (A.D.), In the year of our Lord.
Anno mundi (A.M.), In the year of the world.
Anno urbis conditæ, In the year the city (Rome) was built.
Annus mirabilis, The wonderful year.
Ante bellum, Before the war.
Ante lucem, Before the light.
Ante meridiem, Before noon.
A posteriori, From the effect to the cause.
A priori, From the cause to the effect.
Aptat se pugnæ, He prepares for the contest.
Aqua vitæ, Brandy; spirit; alcohol.
Arbiter elegantium, Master of ceremonies.
Arcana imperii, The mysteries of government; state secrets.
Arcanum; pl. Arcana, A secret or secrets.
Ardentia verba, Expressions of great force.
Argumentum ad crumenam, An argument to the purse; an appeal to interest.
Argumentum ad hominem, An argument deriving its force from the situation of the person to whom it is addressed.
Argumentum ad ignorantiam, Argument founded on an adversary's ignorance of facts.
Argumentum ad judicium, Argument to the judgment.
Argumentum baculinum, Club law; conviction by force.
Ars est celare artem, The art is to conceal art.
Artes honorabit, He will honour the arts.
At spes non fracta, But hope is not broken.
Audaces fortuna juvat, Fortune favours the brave.
Audi alteram partem, Hear the other side.
Aura popularis, The gale of popular favour.
Auri sacri fames, The accursed thirst for gold.
Aut amat, aut odit mulier, A woman either loves or hates.

Aut Cæsar aut nullus, Cæsar or nothing.
Aut vincere aut mori, Victory or death.
Auxilium ab alto, Help is from on high.
A vinculo matrimonii, From the tie of marriage.

Bella! horrida bella! Wars! horrid wars!
Bellum internecinum, A war of extermination.
Bellum lethale, A deadly war.
Benigno numine, By the favour of Providence.
Bis dat qui cito dat, He who gives promptly gives twice as much.
Bis peccare in bello non licet, To blunder twice is not allowed in war.
Bona fide, In good faith; in reality.
Bonis nocit, quisquis pepercerit malis, He hurts the good who spares the bad.
Bonus, A consideration for something received.
Brutum fulmen, A loud but harmless menace.

Cacoethes loquendi, A rage for speaking.
Cacoethes scribendi, An itch for scribbling.
Cæca est invidia, Envy is blind.
Cætera desunt, The remainder is wanting.
Cæteris paribus, Other things being equal.
Candida pax, White-robed peace.
Candide et constanter, Candidly and constantly.
Caput mortuum, The worthless remains.
Caret initio et fine, It wants both beginning and end.
Carpe diem, Enjoy the present day.
Casus fœderis, The end of the league.
Casus belli, An occasion for war.
Caveat actor, Let the doer beware.
Caveat emptor, Let the buyer beware.
Cavendo tutus, Safe through caution.
Cedant arma togæ, Let arms yield to the gown; *i.e.*, let military authority yield to the civil power.
Cede deo, Submit to Providence.
Certiorari, To be made more certain.
Cito maturum, cito putridum, Soon ripe, soon rotten.
Clarior e tenebris, More bright from obscurity.
Colubrem in sinu fovere, To cherish a serpent in one's bosom.
Comitas inter gentes, Politeness between nations.
Commune bonum, A common good.
Communi consensu, By common consent.
Communibus annis, On the annual average.
Componere lites, To settle disputes.
Compos mentis, Of a sound mind.
Concio ad clerum, A discourse to the clergy.
Concordiæ discors, Discordant harmony.
Consilio et animis, By wisdom and courage.
Consensus facit legem, Consent makes the law.
Constantia et virtute, By constancy and virtue.
Contra bonos mores, Against good manners.
Coram nobis, Before us.
Coram non judice, Not before the proper judge
Corpus delicti, The whole nature of the offence.
Corpus juris canonici, The body of the canon law.
Corpus juris civilis, The body of civil law.
Corpus sine pectore, A body without soul.
Corrigenda, Things to be corrected.
Cor unum, via una, One heart, one way.
Credat Judæus Apella! Let the circumcised Jew believe it
Credo quia impossible est, I believe because it is impossible.
Crescit eundo, It increases as it goes.
Crimen falsi, Falsehood; perjury.
Crimen læsæ majestatis, High treason.
Crux criticorum, The cross or puzzle of critics.
Crux mihi anchora, The cross is my anchor.
Cui bono? For whose benefit is it? *Proverbially*, What good will it do?
Cum grano salis, With a grain of salt; with some allowance.
Cum privilegio, With privilege or licence.
Curiosa felicitas, A felicitous tact.
Currente calamo, With a running or rapid pen.
Custos morum, The guardian of morality.

Da locum melioribus, Give place to your betters.
Damnum absque injuria, A loss without an injury.
Data, Things granted.
Dea uctoritate mihi commissa, By the authority entrusted to me.
Debito justitiæ, By debt of justice.
De bonis non, Of the goods not yet administered on.
Deceptio visus, An illusion of the sight.
De die in diem, From day to day.
De facto, From the fact.
Dei gratia, By the grace of God.
De gustibus non est disputandum, There is no disputing about tastes.
De jure, From the law; by right.
Delectando pariterque monendo, By pleasing while admonishing.
Delenda est Carthago, Down with Carthage.
De mortuis nil nisi bonum, Say nothing but good of the dead.
De novo, Anew.
Deo favente, With God's favour.
Deo gratias, Thanks to God.
Deo juvante, With God's help.
Deo volente, With God's will.
Deo, non fortuna, From God, not fortune.
De profundis, Out of the depths.
Desideratum, A thing desired.
Desunt cætera, The remainder is wanting.
Deter digniori, Let it be given to the more worthy.
Dictum de dicto, Report upon hearsay.
Dies faustus, A lucky day.
Dii penates, Household gods.
Dies non (in *law*), A day on which judges do not sit.
Dominus vobiscum, The Lord be with you.
Domus et placens uxor, A house and pleasing wife.
Divide et impera, Divide and rule.
Dramatis personæ, Characters represented in a drama.
Ducit amor patriæ, The love of country guides me.
Dulce et decorum est pro patria mori, It is sweet and glorious to die for one's country.
Dum spiro, spero, Whilst I breathe, I hope.
Dum vivimus, vivamus, While we live let us live.
Dura mater, A membrane covering the brain.
Durante bene placito, During pleasure.
Durante vita, During life.
Dux fœmina facti, A woman was the leader to the deed.

Ecce homo, Behold the man.

Ecce signum, Behold the sign.
E contrario, On the contrary.
Ens rationis, A creature of reason.
Eo nomine, By that name.
E pluribus unum, One composed of many.
Errare est humanum, To err is human.
Erratum, An error; *pl.* Errata, Errors.
Est modus in rebus, There is a medium in all things.
Esto perpetua, Be thou perpetual.
Et cætera, And the rest; &c.
Et sic de similibus, And so of the like.
Ex abundantia, Out of the abundance.
Ex animo, Heartily.
Excerpta, Extracts.
Ex cathedra, From the chair.
Ex concesso, From what has been conceded.
Ex curia, Out of court.
Exempli gratia, By way of example.
Exeunt omnes, All retire.
Ex mero motu, Of his own accord.
Ex necessitate rei, From the necessity of the case.
Ex nihilo nihil fit, Nothing comes of nothing.
Ex officio, By virtue of his office.
Ex parte, On one side only.
Ex pede Herculem, Judge of the whole from the specimen.
Experimentum crucis, A decisive experiment.
Ex post facto, After the fact, or commission of a crime.
Ex professo, Professedly.
Ex tempore, Without premeditation.
Ex uno disce omnes, From one you may learn all.
Ex voto, According to vow.
Ex vi termini, By the meaning or force of the expression.

Faber suæ fortunæ, The architect of his own fortune.
Facile princeps, The admitted chief.
Facilis est descensus, Descent is easy.
Fac simile, A close imitation.
Falsi crimen, A crime of forgery.
Fas est ab hoste doceri, It is allowable to learn even from an enemy.
Fata obstant, The Fates oppose it.
Favete linguis, Favour with your tongues; be silent.
Felo de se, A suicide.
Feræ naturæ, Of a wild nature.
Festina lente, Hasten slowly.
Fiat justitia ruat cœlum, Let justice be done though the heavens should fall.
Fide, non armis, By faith, not by arms.
Fides et justitia, Fidelity and justice.
Fieri facias, A legal term directing an execution to be levied on the goods of a debtor.
Filius nullius, A son of nobody.
Finem respice, Look to the end.
Finis coronet opus, The end crowns the work.
Flagrante bello, During hostilities.
Flagrante delicto, In the commission of the crime.
Flecti non frangi, To bend, not to break.
Fortes fortuna juvat, Fortune assists the brave.
Fortiter in re, With firmness in acting.
Fronti nulla fides, There is no trusting to appearances.
Fugit hora, The hours fly.
Fuit Ilium, Troy *has* been.
Fulmen brutum, Harmless thunder.
Functus officio, Out of office.

Genius loci, The genius of a place.
Genus irritabile vatum, The irritable race of poets.
Gloria in excelsis, Glory to God in the highest.
Gratis, For nothing.
Gratis dictum, Mere assertion.
Gravamen, The thing complained of.
Graviora manent, Greater afflictions await us.

Habeas corpus (in *law*), A writ for delivering a person from imprisonment.
Haud ignara mali, malis succurre disco, Not ignorant of misfortune, I learn to succour the unfortunate.
Haud passibus æquis, Not with equal steps.
Hiatus valde deflendus, A deficiency much to be regretted.
Hic et ubique, Here, there, and everywhere.
Hic finis fandi, Here was an end to the discourse.
Hic jacet, Here lies.
Hoc opus, hic labor est, This is labour; this is work.
Hinc illæ lacrymæ, Hence proceed these tears.
Hoc age, Do this; attend to what you are doing.
Hodie mihi, cras tibi, To-day to me, to-morrow it belongs to you.
Homo homini lupus, Man is a wolf to man.
Homo multarum literarum, A man of many letters.
Homo sum; humani nihil a me alienum puta, I am a man, and deem nothing that relates to man foreign to my feelings.
Hortus siccus, A collection of dried plants.
Hostis humani generis, An enemy of the human race.
Humanum est errare, It is the lot of human nature to err.
Hunc tu caveto, Beware of him.

Ibidem; Ibid., In the same place; *a note of reference.*
Id est (*i.e.*), That is.
Id genus omne, All of that sort.
Idoneus homo, A fit man; a man of known ability.
Ignorantia legis neminem excusat, Ignorance of the law excuses no one.
Ignoti nulla cupido, No desire is felt for a thing unknown.
Ilium fuit, Troy has existed; such things have been.
Imitatores, servum pecus, Servile herd of imitators.
Imo pectore, From the lowest breast.
Imperium in imperio, A government within a government.
Imprimatur, Let it be printed.
Imprimis, In the first place; especially.
Impromptu, Without study.
In articulo mortis, In the article of death; in the last struggle.
In capite, In the head.
In cœlo quies, There is rest in Heaven.
Incognito, Unknown.
In commendam, In trust, or recommendation.
In curia, In the court.
Inde iræ, Hence this resentment.
Index expurgatorius, A list of prohibited books.
In dubiis, In matters of doubt.
In equilibrio, Equally balanced.
In esse, In being.
In extenso, At full length.
In finito, Perpetually.
In flagranti delicto, Taken in the fact.
In forma pauperis, As a pauper.

In foro conscientiæ, Before the tribunal of conscience.
In futuro, In future; henceforth.
Ingens telum necessitas, Necessity is a powerful weapon.
In hoc signo spes mea, In this sign is my hope.
In hoc signo vinces, In this sign thou shalt conquer.
In limine, At the threshold.
In loco, In the place.
In medias res, Into the midst of things.
In medio tutissimus ibis, Safety lies in a medium.
In nubibus, In the clouds.
In ovo, In the egg.
In partibus infidelium, In infidel countries.
In perpetuam rei memoriam, In perpetual memory of the affair.
In perpetuum, Forever.
In posse, In possible existence.
In presenti, At the present time.
In propria persona, In person.
In puris naturalibus, Quite naked.
In re, In the matter of.
In rerum natura, In the nature of things.
In situ, In its original situation.
Instanter, Instantly.
Instar omnium, Like all; an example to others.
In statu quo, In the former state or condition.
Inter alia, Among other things.
Inter arma leges silent, In the midst of arms the laws are silent.
Inter nos, Between ourselves.
In terrorem, As a warning.
Inter se, Among themselves.
In toto, In the whole; entirely.
In transitu, On the passage.
In utrumque paratus, Prepared for either event.
In vacuo, In empty space, or in a vacuum.
In vino veritas, There is truth in wine; truth is told under the influence of wine.
Invita Minerva, Without the aid of genius.
Ipse dixit, He said it himself; dogmatism.
Ipsissima verba, The very words.
Ipso facto, In the fact itself.
Ipso jure, By the law itself.
Ira furor brevis est, Anger is brief madness.
Ita lex scripta est, Thus the law is written.

Jacta est alea, The die is cast.
Janius clausis, With closed doors.
Judicium dei, The judgment of God.
Juniores ad labores, Young men for labours.
Jure divino, By divine law.
Jure humano, By human law.
Jus civile, Civil law.
Jus gentium, Law of nations.
Justitiæ soror fides, Faith is the sister of justice.
Justum et tenacem proposite virum, A just man, and steady to his purpose.

Labor ipse voluptas, Labour itself is pleasure.
Labor omnia vincit, Labour conquers everything.
Lapsus linguæ, A slip of the tongue.
Lares et penates, Household gods.
Lateat scintillula forsan, A small spark may lurk unseen.
Latet anguis in herba, There's a snake in the grass.
Laus deo, Praise to God.
Leges legum, The law of laws.
Leonina societas, A lion's company.
Lex loci, The law or custom of the place.
Lex non scripta, The common law.
Lex scripta, Statute law.
Lex talionis, The law of retaliation.
Lex terræ, The law of the land.
Lis sub judice, A case not yet decided.
Lite pendente, During the trial.
Litera scripta manet, The written letter remains.
Literatim, Literally; letter for letter.
Locum tenens, A deputy or substitute.
Locus sigilli (L. S.), The place of the seal.
Longo intervallo, By or with long interval.
Lucidus ordo, A clear arrangement.
Ludere cum sacris, To trifle with sacred things.
Lusus naturæ, A sport or freak of nature.

Macte virtute, Proceed in virtue.
Magna civitas, magna solitudo, A great city is a great desert.
Magna est veritas, et prevalebit, Truth is mighty and it will prevail.
Magnas inter opes inops, Poor in the midst of great wealth.
Magni nominis umbra, The shadow of a great name.
Magnum opus, A great work.
Major domo, Master of the house; a steward.
Mala fide, Treacherously.
Mali exempli, Of a bad example.
Malum in se, Bad in itself.
Malum prohibitum, Bad because prohibited.
Malus pudor, False shame.
Mania a potu, Madness caused by drunkenness.
Manibus pedibusque, With hands and feet; tooth and nail.
Manu forti, With a strong hand.
Mare clausum, A closed sea; a bay.
Materfamilias, The mother of a family.
Materia medica, Substances used in the healing art.
Materium superabat opus, The workmanship surpassed the materials.
Maximum, The greatest possible.
Maximus in minimis, Very great in trifling things.
Medio tutissimus ibis, A medium course will be safest.
Me judice, I being judge; in my opinion.
Memento mori, Remember death.
Memorabilia, Things to be remembered.
Memoria in eterna, In everlasting remembrance.
Mensa et toro, From board and bed.
Mens conscia recti, A mind conscious of rectitude.
Mens sana in corpore sano, A sound mind in a sound body.
Meo periculo, At my own risk.
Merum sal, Pure salt; genuine Attic wit.
Meum et tuum, Mine and yours.
Mirabile dictu, Wonderful to be told.
Miserabile vulgus, A wretched crew.
Mittimus, We send; a writ to commit an offender to prison.
Modus operandi, Manner of operation.
Mole ruit sua, It is crushed by its own weight.
More majorum, After the manner of our ancestors.
Mors omnibus communis, Death is common to all.

Motu proprio, Of his own accord.
Mos pro lege, Custom for law.
Multa gemens, Groaning deeply.
Multum in parvo, Much in little.
Mutatis mutandis, The necessary changes being made.

Natale solum, Natal soil.
Ne cede malis, Yield not to misfortune.
Necessitas non habet legem, Necessity has no law.
Nec mora, nec requies, No rest or repose,
Nec pluribus impar, Not an equal match for numbers.
Nec prece nec pretio, Neither by entreaty nor by bribe.
Nec scire fas est omnia, It is not permitted to know all things.
Ne exeat, Let him not depart.
Ne fasti dies, Unlucky days.
Nem. con. (*nemine contradicente*), Without opposition.
Nemo me impune lacessit, No one wounds me with impunity.
Nemo solus sapit, No one is wise alone.
Nemo repente fuit turpissimus, No man ever became a villain at once.
Ne plus ultra, Nothing further; the uttermost point.
Ne quid nimis, *Literally*, not too much; *i.e.*, go not too far.
Ne sutor ultra crepidam, Let not the shoemaker go beyond his last.
Nihil debet, He owes nothing; a plea, denying a debt.
Nil admirari, To wonder at nothing.
Nil desperandum, Never despair.
Nil dicit, He says nothing.
Nisi prius, Unless before.
Nolens volens, Whether he will or not.
Nolle prosequi, To be unwilling to proceed.
Nolo episcopari, I do not wish to be made a bishop.
Non compos mentis, Not of sound mind.
Non conscire sibi, Conscious of no fault.
Non constat, It does not appear.
Non est inventus, He has not been found.
Non libet, It does not please me.
Non nobis solum, Not merely for ourselves.
Non obstante, Notwithstanding.
Non omnia possumus omnes, We cannot, all of us, do all things.
Non omnis moriar, I shall not wholly die.
Non quo, sed quomodo, Not by whom, but how.
Non sequitur, It does not follow; an unwarranted conclusion.
Non sibi, sed omnibus, Not for itself, but for all.
Non sum qualis eram, I am not what I was.
Noscitur a sociis, He is known by his companions.
Nota bene (N.B.), Mark well.
Novus homo, A new man.
Nudum pactum, An invalid agreement.
Nugæ canoræ, Melodious trifles.
Nugis armatus, Armed with trifles.
Nullius filius, The son of nobody.
Nunc aut nunquam, Now or never.
Nunquam minus solus, quam cum solus, Never less alone than when alone.
Nunquam non paratus, Never unprepared.
Nusquam tuta fides, Our confidence is nowhere safe.

Obiter dictum, A thing said by the way, or in passing.
Observanda, Things to be observed.
Obsta principiis, Resist the first beginnings.
Occurrent nubes, Clouds will intervene.
Oderint dum metuant, Let them hate provided they fear.
Odi profanum, I loathe the profane.
Odium theologicum, The hatred of divines.
Ohe! jam satis, Oh there is now enough.
Omnia bona bonis, All things are good with the good.
Omnia vincit amor, Love conquers all things.
Omnia vincit labor, Labour overcomes all things.
Omnibus hoc vitium est, All have this vice.
Onus probandi, The burden of proving.
Operæ pretium est, It is worth while.
Optimates, Of the first rank.
Ora et labora, Pray and work.
Orator fit, poeta nascitur, The orator is made such by education, but a poet must be born such.
Ore tenus, From the mouth.
O! si sic omnia, Oh! that he had always done or spoken thus.
O tempora! O mores! Oh the times! Oh the manners!
Otium cum dignitate, Ease with dignity; dignified leisure.
Otium sine dignitate, Ease without dignity.

Pacta conventa, The conditions agreed upon.
Pallida mors, Pale death.
Palmam qui meruit ferat, Let him who has won it bear the palm.
Pari passu, With equal pace, together.
Paritur pax bello, Peace is produced by war.
Par nobile fratrum, A noble pair of brothers; two just alike.
Par oneri, Equal to the burden.
Pars pro toto, Part for the whole.
Particeps criminis, An accomplice.
Parturiunt montes, The mountain is in labour.
Parva leves capiunt animas, Little minds are caught with trifles.
Passim, Everywhere.
Pater familias, The father of a family.
Pater noster, Our Father; the Lord's prayer.
Pater patriæ, Father of his country.
Pax in bello, Peace in war.
Peccavi, I have sinned.
Pendente lite, Pending the suit.
Per annum, By the year.
Per capita, By the head.
Per centum, By the hundred.
Per diem, By the day.
Per fas et nefas, Through right and wrong.
Per interim, In the meantime.
Per mare per terras, Through sea and land.
Per saltum, By a leap or jump.
Per se, By itself.
Petitio principii, A begging of the question.
Poeta nascitur, non fit, Nature, not study, must form the poet.
Posse videor, The appearance of being able.
Post bellum auxilium, Aid after the war.
Post mortem, After death.
Postulata, Things required.
Præcognita, Things previously known.
Prescriptum, A thing prescribed.

Prima facie, On the first view.
Primæ viæ, The first passages.
Primum mobile, The first mover; the first impulse.
Primus inter pares, Chief among equals.
Principia, First principles.
Principia, non homines, Principles, not men.
Principiis obsta, Oppose the first appearance of evil.
Pro aris et focis, For our altars and firesides.
Probatum est, It is proved.
Pro bono publico, For the public good.
Pro confesso, As if conceded.
Pro et con, For and against.
Pro forma, For the sake of form.
Pro hac vice, For this turn or occasion.
Pro patria, For our country.
Propaganda fide, For extending the faith.
Pro rata, In proportion.
Pro rege, lege et grege, For the king, the law and the people.
Pro re nata, For a special emergency.
Pro tanto, For so much.
Pro tempore, For the time being.
Prudens futuri, Thoughtful of the future.
Pugnis et calcibus, With fists and heels; with all the might.
Punica fides, Punic faith; treachery.

Quære, Query; inquiry.
Qualis ab incepto, The same as from the beginning.
Quamdiu se bene gesserit, During good behaviour.
Quantum libet, As much as you please.
Quantum meruit, As much as he deserved.
Quantum mutatus ab illo, How changed from what he once was.
Quantum sufficit, A sufficient quantity.
Quasi, As if; in a manner.
Quem deus vult perdere, prius dementat, Whom God purposes to destroy, he previously deprives of understanding.
Quid nunc? What now? a newsmonger.
Qui docet, discit, He who teaches others, learns himself.
Quid pro quo, One thing for another; tit for tat.
Quid rides? Why do you laugh?
Qui non proficit, deficit, He who does not advance, goes backward.
Qui tam? Who as well?
Quis custodiet ipsos custodes? Who shall guard the guards themselves?
Qui transtulit, sustinet, He who brought us hither still preserves us.
Quoad hoc, To this extent.
Quo animo? With what mind or intention?
Quod avertat deus! Which God avert!
Quod erat demonstrandum, Which was meant to be shown.
Quod erat faciendum, Which was to be done.
Quod vide, Which see.
Quo jure? By what right?
Quorum pars fui, Of which, or whom, I was a part.
Quot homines, tot sententiæ, So many men, so many minds.
Quo warranto? By what authority?

Rara avis, A rare bird; a prodigy.
Recte et suaviter, Justly and mildly.
Rectus in curia, Upright in the court; with clean hands.
Redolet lucerna, It smells of the lamp; it is a laboured production.
Reductio ad absurdum, A reducing a position to an absurdity.
Re infecta, The business being unfinished.
Rem acu tetigisti, You have touched the thing exactly [lit. with a needle].
Renovato nomine, By a revived name.
Requiescat in pace, May he rest in peace.
Rerum primordia, The first elements of things.
Res angusta domi, Narrow circumstances at home; poverty.
Respice finem, Look to the end.
Res publica, The commonwealth.
Resurgam, I shall rise again.
Ride, si sapis, Laugh, if you are wise.
Risum teneatis, amici? Can you, my friend, forbear laughing?
Rus in urbe, The country in town.

Salvo jure, The right being safe.
Salvo pudore, Without offence to modesty.
Sanctum sanctorum, Holy of Holies.
Sapere aude, Dare to be wise.
Sat cito, si sat bene, Soon enough, if but well enough.
Satis, superque, Enough, and more than enough.
Satis verborum, Enough of words; you need say no more.
Scan. Mag. (scandalum magnatum), Scandal of the great.
Scienter, Knowingly.
Scilicet, That is to say; to wit.
Scire facias, Cause it to be known.
Scribimus indocti, doctique, Learned and unlearned, all write.
Secundum artem, According to rule; scientifically.
Secundum naturam, According to the course of nature.
Se defendendo, In self-defence.
Semel et simul, Once and together.
Semper idem, Always the same.
Semper fidelis, Always faithful.
Semper paratus, Always ready.
Semper vivit in armis, He ever lives in arms.
Seriatim, In regular order.
Sero, sed serio, Late, but seriously.
Servabo fidem, I will keep faith.
Servare modum, To keep within bounds.
Sic itur ad astra, Such is the way to immortality.
Sic passim, So everywhere.
Sic transit gloria mundi, So passes away earthly glory.
Sicut ante, As before.
Sic vos non vobis, Thus you do not labour for yourselves.
Silent leges inter arma, The laws are silent amidst arms.
Simplex munditiis, Simple in neatness.
Sine cura, Without charge or care.
Sine die, Without a day appointed.
Sine dubio, Without doubt.
Sine invidia, Without envy.
Sine odio, Without hatred.
Sine qua non, An indispensable condition.
Siste viator, Stop, traveller.
Sit tibi terra levis, May the earth lie lightly on thy grave.
Spero meliora, I hope for better things.
Spes mea Christus, Christ is my hope.
Spes tutissima cœlis, The safest hope is in Heaven.

Spolia opima, The richest booty.
Stans pede in uno, Standing on one foot.
Stat magni nominis umbra, He stands the shadow of a mighty name.
Stat pro ratione voluntas, Will stands for reason.
Statu quo, As things were before.
Stet, Let it stand.
Stratum super stratum, Layer above layer.
Stylo inverso, With the back of the pen.
Sua cuique voluptas, Every man has his own pleasures.
Suaviter in modo, fortiter in re, Gentle in manners, but resolute in deed.
Sub judice, Under consideration.
Sub pœna, Under a penalty.
Sub rosa, Under the rose; privately.
Sub silentio, In silence.
Succedaneum, A substitute.
Sui generis, Of its own kind.
Summum bonum, The chief good.
Summum jus, summa injuria, The rigour of the law is the rigour of oppression.
Suo marte, By his own strength.
Super visum corporis, Upon a view of the body.
Surgit amari aliquid, Something bitter rises.
Suum cuique, Let each have his own.
Suus cuique mos, Every one has his particular habit.

Tabula rasa, A smooth or blank tablet.
Tædium vitæ, Weariness of life.
Tam Marte quam Minerva, Possessed equally of courage and genius.
Te judice, You being the judge.
Telum imbelle sine ictu, A feeble weapon thrown without effect.
Tempora mutantur, et nos mutamur in illis, The times are changed and we are changed with them.[*]
Tempus edax rerum, Time the devourer of all things.
Tempus omnia revelat, Time reveals all things.
Tenax propositi, Tenacious of his purpose.
Terræ filius, A son of the earth; a man of no birth.
Terra firma, Solid earth; a safe footing.
Terra incognita, An unknown country.
Tertium quid, A third something.
Toga virilis, The gown of manhood.
Tot homines, quot sententiæ, So many men, so many minds.
Totidem verbis, In just so many words.
Toties quoties, As often as.
Totis viribus, With all his might.
Toto cœlo, By the whole heavens; diametrically opposite.
Totus mundus agit histrionem, All the world's a stage.
Tôtus teres, atque rotundus, Completely smooth and round.
Transeat in exemplum, May it pass into an example.
Tria juncta in uno, Three joined in one.
Truditur dies die, One day is pressed onward by another.
Tu ne cede malis, Do not yield to evils.
Tu quoque, Brute! And thou, too, Brutus!

Tutor et ultor, Protector and avenger.
Tuum est, It is your own.

Uberrima fides, Implicit reliance.
Ubi jus incertum, ibi jus nullum, Uncertainty destroys law.
Ubi libertas, ibi patria, Where liberty dwells, there is my country.
Ubi supra, Where above mentioned.
Ultima ratio regum, The last argument of kings; military weapons.
Ultima thule, The utmost boundary or limit.
Ultimatum, The last or only condition.
Ultimus regum, The last of tyrants.
Una voce, With one voice; unanimously.
Unguis in ulcere, A claw in the wound.
Usque ad aras, To the very altars.
Ut infra, As below.
Utile dulci, The useful with the pleasant.
Uti possedetis, As you possess; state of present possession.
Ut prosim, That I may do good.

Vade mecum, Go with me; a constant companion.
Væ victis, Woe to the vanquished.
Valeat quantum, valere potest, Let it pass for what it is worth.
Valete ac plaudite, Farewell and applaud.
Variæ lectiones, Various readings.
Vehimur in altum, We are borne on high.
Velis et remis, With sails and oars; by every possible means.
Vel prece, vel pretio, For either love or money.
Veluti in speculum, As in a mirror.
Vendidit hic auro patriam, This man sold his country for gold.
Veni, vidi, vici, I came, I saw, I conquered.
Venire facias, You will cause to come, the writ for summoning a jury.
Ventis secundis, With prosperous winds.
Verbatim et literatim, Word for word and letter for letter.
Verbum sat sapienti, A word is enough for a wise man.
Veritas odium parit, Truth often causes hatred.
Ver non semper viret, Spring does not always flourish.
Versus, Against.
Vestigia nulla retrorsum, There are no returning footsteps.
Via, By the way of.
Via media, A middle course.
Vice, In the place of.
Vice versa, The terms being exchanged.
Videlicet, To wit; namely.
Vide et crede, See and believe.
Vide ut supra, See what is stated above.
Vi et armis, By main force.
Vincit amor patriæ, Love of country prevails.
Vincit, qui se vincit, He conquers who overcomes himself.
Vinculum matrimonii, The bond of marriage.
Vires acquirit eundo, She acquires strength in her progress.
Virtus incendit vires, Virtue kindles the strength.
Virtute officii, By virtue of office.
Virtute non viris, From virtue not from men.
Vis a tergo, A propelling force from behind.
Vis inertiæ, The power of inertness.

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[*] Much inquiry has been made as to the origin of this line. It has been found, at last, by Prof. Lincoln, of Brown University, in the writings of Matthias Borbonius, a German writer of Latin poetry, who represents it as a saying of Lotharius I. In the original the line stands thus: *Omnia* mutantur et nos mutamur in illis.—See Pres. Sears' edition of Roget's "Thesaurus."

Vis preservatrix, A preserving power.
Vis vitæ, The vigour of life.
Vita brevis, ars longa, Life is short and art is long.
Vitam impendere vero, To stake one's life for the truth.
Vivat respublica, Live the republic.
Vivat rex, Long live the king.
Viva voce, By the living voice; by oral testimony.
Vive memor lethi, Live mindful of death.
Vivere sat vincere, To conquer is to live enough.
Vive, vale, Farewell and be happy.
Vivida vis animi, The lively vigour of genius.
Videlicet, Viz.: Namely.
Volo, non valeo, I am willing, but unable.
Vota vita mea, My life is devoted.
Vox et preterea nihil, A voice and nothing more.
Vox faucibus hæsit, The voice (or words) stuck in the throat.
Vox populi, vox dei, The people's voice is God's voice.
Vulnus immedicabile, An irreparable injury.
Vultus est index animi, The face is the index of the mind.

Zonam perdidit, He has lost his purse.
Zonam solvere, To loose the virgin zone.

FROM THE FRENCH, WITH ENGLISH TRANSLATIONS.

A bon chat, bon rat, To a good cat, a good rat; well matched; set a thief to catch a thief.
A fin, To the end.
A grands frais, At great expense.
Aide-toi, le ciel t'aidera, Help yourself and Heaven will help you.
A l'abandon, At random.
A la bonne heure, Well timed; at an early hour.
A la dérobée, By stealth.
A la Française, After the French mode.
A la mode, According to the custom.
A l'Anglaise, After the English custom.
A l'envi, Emulously.
A l'extremité, At the point of death; without resource.
A l'improviste, Unawares.
A l'outrance, To the utmost.
A ma puissance, To my power.
A main armée, With force of arms.
A merveille, To a wonder; marvellously.
A moitié de moitié, By halves.
Amour fait beaucoup, mais argent fait tout, Love is pleasant, but money is omnipotent.
Amour propre, Self-love, vanity.
A pas de geant, With a giant's stride.
A peindre, A model for a painter.
A propos, To the point.
A rez de chaussée, Even with the ground.
A tort et à travers, At cross purposes.
Au bon droit, To the just right.
Au désespoir, In despair.
Au fait, Well instructed; master of it.
Au fond, At the bottom.
Au pis aller, At the worst.
Au revoir, Adieu, until we meet again.
Aussitôt dit, aussitôt fait, No sooner said than done.
Autant d'hommes, autant d'avis, So many men, so many minds.
Autre droit, Another's right.
Avant courier, A forerunner.
A votre santé, To your health.

Bas bleu, A blue stocking, a literary woman.
Beau idéal, A perfect model of beauty.
Beau monde, The fashionable world.
Bel esprit, A brilliant mind.
Beaux esprits, Gay spirits; men of wit.
Bizarre, Odd; fantastic.
Bon-bon, A sweetmeat; confectionery.
Bon gré, mal gré, Willing or unwilling.
Bonhomie, Good natured simplicity.
Bon jour, bonne œuvre, The better day, the better deed.
Bonne, A nurse or governess.
Bonne bouche, A delicate bit.
Bonne et belle assez, Good and handsome enough.
Bon ton, The height of fashion.
Bon-vivant, A jovial companion; a luxurious liver.
Bourgeois, A citizen.
Boutez en avant, Push forward.
Breveté, Patented.

Canaille, The rabble.
Cap-à-pié, From head to foot; all over.
Carte blanche, A blank sheet of paper; full powers.
Ce monde est plein de fous, The world is full of fools.
C'est en fait de lui, It is all over with him.
C'est une autre chose, It is quite a different thing.
Chacun à son goût, Every one to his taste.
Champs Elysées, Elysian fields; a beautiful public park in Paris.
Chaque pays a sa guise, So many countries, so many customs.
Chateaux en Espagne, Castles in the air; fanciful plans.
Chef-d'œuvre, A masterpiece.
Cheval de bataille, A war-horse; the main dependence.
Chevalier d'industrie, A knight of industry; one who lives by persevering fraud.
Ci-devant, Formerly.
Comme il faut, As it should be.
Concierge, The keeper of a prison.
Congé d'élire, A leave to elect.
Contre temps, A mischance; disappointment.
Corps diplomatique, The diplomatic body.
Couleur de rose, Rose colour; of flattering or pleasing appearance.
Coup d'essai, A first essay; attempt.
Coup d'etat, A stroke of policy or of violence in state affairs.
Coup de grâce, A finishing stroke.
Coup de main, A sudden enterprise or effort.
Coup d'œil, A rapid glance of the eye.
Coup de pied, A kick.
Coup de soleil, A stroke of the sun.
Courage sans peur, Courage without fear.
Coûte qui coûte, Let it cost what it may.
Cul de sac, The bottom of the bag; a difficulty; a street or lane that has no outlet.

D'accord, Agreed; in tune.

Dames de la halle, Market women.
De gaieté de cœur, Sportively.
De haute lutte, By a violent struggle.
Dehors, Without.
Déjeûner à la fourchette, A meat breakfast.
De mal en pis, From bad to worse.
Dénoûement, The unravelling of a plot.
Dernier resort, A last resource.
Détour, A circuitous march.
Devoir, Duty.
De trop, Too much, or too many.
Dieu défend le droit, God defends the right.
Dieu et mon droit, God and my right.
Dieu vous garde, God bless you.
Double entendre, A double meaning.
Douceur, Sweetness; a bribe.
Doux yeux, Soft glances.
Droit des gens, The law of nations.
Droit et avant, Right and forward.
Du fort au foible, From the strong to the weak; one with another.

Eau de vie, Brandy.
Eclat, Splendour; pomp; glory.
Elite, The best part.
Eloignment, Estrangement.
Emeute, Insurrection; uproar.
En ami, As a friend.
En avant! Forward!
Enfans perdus, Lost children; the forlorn hope.
Enfant gâté, A spoiled child.
Enfant trouvé, A foundling.
En flûte, Armed with guns only on the upper deck.
En foule, In a crowd.
En habiles gens, Like able men.
En masse, In a body.
En passant, In passing; by the way.
En plein jour, In broad day.
En revanche, In return.
En route, On the way.
En suivant le vérité, In following the truth.
Entre deux feux, Between two fires.
Entre deux vins, Half drunk.
Entre nous, Between ourselves.
Esprit de corps, The spirit of the body.
Etat-major, A specific number of officers belonging to the same corps.
Etourderie, Giddiness; imprudence.
Exposé, An exposition; recital.

Façon de parler, Manner of speaking.
Faire mon devoir, To do my duty.
Faire sans dire, To act without ostentation.
Fauteuil, An easy chair.
Faux pas, A false step; a mistake.
Femme couverte, A married woman.
Femme sole, A woman unmarried.
Ferme ornée, A decorated farm.
Fête champêtre, A rural feast.
Feu de joie, A firing of guns in token of joy; a bonfire.
Feuilleton, A small leaf; a supplement to a newspaper; a pamphlet.
Fille de chambre, A chambermaid.
Flux de bouche, a flow of words; garrulity.
Froides mains, chaude amour, A cold hand and warm love.

Gaieté de cœur, Gaiety of heart.
Garde de corp, A body guard.
Gardez bien, Take good care.
Gardez la foi, Keep the faith.
Gens de condition, People of rank.
Gens d'église, Churchmen.
Gens de guerre, Military men.
Gens de même famille, Birds of a feather.
Gens de peu, Meaner sort of people.
Goutte à goutte, Drop by drop.
Grand parure, Full dress.
Guerre à l'outrance, War to the uttermost.

Haut goût, High flavour.
Homme de robe, A man in civil office.
Homme d'esprit, A man of talent, or of wit.
Honi soit qui mal y pense, Shame to him who evil thinks.
Hors de combat, Out of condition to fight.
Hotel de ville, A town hall.
Hotel Dieu, The house of God; a hospital in Paris.

Il a le diable au corps, The devil is in him.
Il a le vin mauvais, He is quarrelsome when in his cups.
Il ennuie à qui attend, Waiting is tedious.
Il faut de l'argent, Money is wanting.
Il n'a ni bouche, ni éperon, He has neither mouth nor spur; neither wit nor courage.
Il n'a pas inventé la poudre, He was not the inventor of gunpowder; he is no conjurer.
Il ne faut jamais defier un fou, One must never bid defiance to a fool.
Il n'est sauce que d'appetit, Hunger is the best sauce.

J'ai bonne cause, I have a good cause.
Jamais arrière, Never behind.
Je ne cherche qu'un, I seek but for one.
Je ne sais quoi, I know not what.
Je suis prêt, I am ready.
Jeu de mots, A play on words; a pun.
Jeu d'esprit, A witticism.
Jeu de theâtre, Stage-trick; attitude.
Je vis en espoir, I live in hope.
J'y suis pour mon coût, I paid dear for it.

La beauté sans vertu est une fleur sans parfum, Beauty without virtue is like a flower without fragrance.
Laissez nous faire, Let us alone.
La maladie sans maladie, Hypochondriacism.
La patience est amère, mais son fruit est doux, Patience is bitter, but its fruit is sweet.
La vertu est la seule noblesse, Virtue is the only nobility.
L'eau en vient à la bouche, That makes one's mouth water.
Le beau monde, The fashionable world.
Le bon temps viendra, The good time will come.
Le coût en ôte la goût, The cost takes away the taste.
Le diable boiteux, The lame devil, or the devil on two sticks.
Le grand œuvre, The great work; the philosopher's stone.

Le jeu n'en vaut pas le chandelle, The object is not worth the trouble.
Le mot d'énigme, The key of the mystery.
L'empire des lettres, The republic of letters.
Le roi le veut, The king wills it.
Les affaires font les hommes, Business makes men.
Le savoir faire, The knowledge how to act; address.
Le savoir vivre, Acquaintance with life and manners.
Les doux yeux, Soft glances.
Les murailles ont des oreilles, Walls have ears.
Le tout ensemble, All together.
Lettre de cachet, A sealed letter; a royal warrant.
L'homme propose et Dieu dispose, Man proposes, and God disposes.
Loyal devoir, Loyal duty.
Loyauté m'oblige, Loyalty binds me.
Loyauté n'a honte, Loyalty has no shame.

Maintien le droit, Maintain the right.
Maison de campagne, A country seat.
Maison de ville, The town-house.
Maître d'hôtel, A house-steward.
Maladie du pays, Home-sickness.
Mal à propos, Ill-timed.
Malheur ne vient jamais seul, Misfortunes seldom come alone.
Mauvais gout, Bad taste.
Mauvaise honte, False modesty.
Médecin, guéris-toi toi même, Physician, cure thyself.
Morceau, A morsel.
Mots d'usage, Words in common use.
Muet comme un poisson, Mute as a fish.

Ni l'un ni l'autre, Neither the one nor the other.
N'importe, It matters not.
Nom de plume, A literary title.
Nom de guerre, A war name; a travelling title.
Nonchalance, Carelessness; indifference.
Nous verrons, We shall see.
Nul bien sans peine, No pains, no gains.

Œil de bœuf, A bull's eye.
On commence par être dupe; on finit par être fripon, They begin by being fools, and end in becoming knaves.
On connaît l'ami au besoin, A friend is known in time of need.
On dit, A flying rumour.
Outré, Out of the usual limits; extravagant.
Oublier je ne puis, I can never forget.

Papier maché, A substance made of paper reduced to a pulp.
Par accès, By snatches or starts.
Par excellence, By way of eminence.
Par signe de mémpris, As a token of contempt.
Parvenu, A new comer; an upstart.
Pas à pas on va bien loin, Step by step one goes a long way.
Passe partout, A master-key.
Patois, A corrupt dialect.
Peine forte et dure, Strong and severe pain.
Penchant, Inclination; desire.
Père de famille, The father of a family.
Petit maître, A fop.
Peu de bien, peu de soin, Little wealth, little care.
Peu de gens savent être vieux, Few persons know how to be old.
Plus on est de fous, plus on rit, The more fools, the more fun.
Plus sages que les sages, More wise than the wise.
Point d'appui, Point of support; prop.
Pour comble de bonheur, As the height of happiness.
Pour passer le temps, To pass away the time.
Pour y parvenir, To accomplish the object.
Prêt d'accomplir, Ready to accomplish.
Prêt pour mon pays, Ready for my country.
Procès verbal, A written statement.
Projet, A plan or project.
Protégé, One protected or patronized.

Quand on voit la chose on la croit, Seeing is believing.
Quelque chose, A trifle.
Qui aime bien, bien châtie, He loves well who chastises well.
Qui m'aime, aime mon chien, Love me, love my dog.
Qui n'a santé n'a rien, He that wants health wants everything.
Qui pense? Who thinks?
Qui vive? Who goes there? on the *qui vive*, on the alert.

Raisonné, Rational; arranged in regular system.
Recherché, Nice to an extreme; uncommon and desirable.
Reculer pour mieux sauter, To go back in order to get a better leap.
Repondre en Normand, To give an evasive answer.
Résumé, An abstract or summary.
Revenons à nos moutons, Let us return to our subject.
Rien n'est beau que le vrai, Nothing is beautiful but the truth.
Rire entre cuir et chair, To laugh in one's sleeve.
Role d'équipage, A list of the crew.
Ruse contre ruse, Diamond cut diamond; trick for trick.
Ruse de guerre, A stratagem.

S'amuser à la moutarde, To stand on trifles.
Sans cérémonie, Without ceremony.
Sang froid, Indifference; apathy.
Sans changer, Without changing.
Sans culottes, Ragged men; the lower classes.
Sans Dieu rien, Nothing without God.
Sans peur et sans reproche, Without fear and without reproach.
Sans souci, Without care; free and easy.
Sans tâche, Stainless.
Sauve qui peut, Save himself who can.
Savoir faire, Ability; skill.
Savoir vivre, Good breeding.
Selon les régles, According to rule.
Si je puis, If I can.
Sobriquet, A nickname.
Soi-disant, Self-styled.
Songes sont mensonges, Dreams are lies.
Souffler le chaud et le froid, To blow hot and cold.
Soyez ferme, Be firm.

Table d'hôte, A common table for guests.
Tâche sans tache, A work without a stain.
Tant mieux, So much the better.

Tant pis, So much the worse.
Tel maître, tel valet, Like master, like man.
Tête à tête, Head to head; in close conversation.
Tiens à la verité, Maintain the truth.
Tiens ta foi, Keep thy faith.
Toujours prêt, Always ready.
Tour d'expression, An idiom or peculiar mode of expression.
Tout au contraire, On the contrary.
Tout bien ou rien, The whole or nothing.
Tout ensemble, The whole taken together.
Tout est pris, All is taken; every avenue preoccupied.
Tout lui rit, All goes well with him.
Une fois n'est pas coutume, One act does not make a habit.
Un sot à triple étage, An egregious blockhead.

Valet de chambre, An attendant; a footman.
Verité sans peur, Truth without fear.
Videttes, Sentinels on horseback.
Vis à vis, Opposite; facing.
Vive la bagatelle! Success to trifling!
Vive le roi! Long live the king!
Voilà tout, That's all.
Voilà une autre chose, That's quite a different matter.
Voir le dessons des cartes, To be in the secret.
Vous y perdrez vos pas, You will lose your labour.

FROM THE ITALIAN AND SPANISH.

A cader và chi troppo alto sale, It. Who climbs too high, goes to fall.
A causa persa, parole assai, It. When the cause is lost, there is enough of words.
Ad ogni uccello, suo nido è bello, It. With every bird its own nest is charming.
Auto de fé, Sp. An act of faith; the name given in Spain and Portugal to the burning of Jews and heretics.
Aviendo pregonado vino, vendere vinagre, Sp. After having praised their wine, they sell us vinegar.
A vostra salute, It. To your health.

Bella femina che ride, vuol dir, borsa che piange, It. The smiles of a pretty woman are the tears of the purse.
Ben trovato, It. Well found—an ingenious solution.
Ben vienes, si vienes solo, Sp. Thou comest well, if thou comest alone: spoken of misfortune.

Cambio non è furto, It. Exchange is no robbery.
Che sarà, sarà, It. Whatever will be, will be.
Chi da presto raddoppia il dono, It. He that gives quickly doubles the gift.
Chi risponde presto, sa poco, It. Who answers suddenly knows little.
Chi non s'arrischia, non guadagna, It. Nothing venture, nothing have.
Chi non sa niente, non dubita de niente, It. He who knows nothing, doubts of nothing.
Chi tace confessa, It. Silence is confession.
Cicerone, It. A guide who explains curiosities.
Clair-obscur, It. In *painting*, the art of judiciously distributing light and shade.
Cognoscente, It. A connoisseur.
Con amore, It. With love; earnestly.
Contra fortuna no vale arte ninguna, Sp. There is no fence against fortune.
Conversazione, Conversation; a meeting for conversation.
Cosa ben fatta, è fatta due volte, It. A thing well done is twice done.
Cosa fatta capo ha, It. A thing which is done has a head.

Di il vero e effronterai il diavolo, It. Speak the truth and shame the devil.
Dolce, It. In *music*, soft and agreeable.
Dolce cose a vedere, e dolci inganni, It. Things sweet to see, and sweet deceptions—*applied to specious but deceitful appearances.*
Dolce far niente, It. Sweet doing nothing.—*A difficult phrase to give in equivalent English.*
Doloroso, It. Soft and pathetic.
Due teste vagliano piu che una sola, It. Two heads are better than one.

E cativo vento che non è buono per qualchumo, It. 'Tis an ill wind that blows nobody good.
El corazon manda las carnes, Sp. The heart bears up the body.
E meglio cader dalle finestre che dal tetto, It. It is better to fall from a window than the roof.
E meglio tardi che mai, It. Better late than never.
Escritura, buena memoria, Sp. Writing, the best memory.

Giovane Santo, Diavolo vecchio, It. A young saint, an old devil.
Gli assenti hanno torto, It. The absent are in the wrong.
Guerra al cuchillo, Sp. War to the knife.

Hora è sempre, It. It is always time.

Il sabio muda conscio, il nescio no, Sp. A wise man sometimes changes his opinion, a fool never.
Il volto sciolto, i pensieri stretti, It. The countenance open, but the thoughts concealed.
In petto, It. Within the breast; in reserve.

Joco di mano, joco villano, It. Practical jokes belong only to the low.

La gente pone, y Dios dispono, Sp. Men purpose, but God doth dispose.
La mentira tiene las piernas cortas, Sp. A lie has short legs.
La povertà è la madre di tutte le arti, It. Poverty is the mother of all arts.
La speranza è il pan de miseri, It. Hope is the poor man's bread.
Las riquezas son bagajes de la fortuna, It. Riches are the baggage of Fortune.
Lauda la maglié e tienti donzello, It. Commend a wife, but remain a bachelor.

Libretto, It. A little book or pamphlet.
Locos y niños, dizen la verdad, Sp. Children and fools speak truth.

Maggior' fretta minor atto, It. The more haste the worse speed.
Mas vale saber que haber, Sp. Better be wise than rich.
Mas vale ser necio que porsiado, Sp. Better be a fool than obstinate.
Mas vale tarde que nunca, Sp. Better late than never.
Mi date creta per casio, It. You give me chalk for cheese.
Mucho en el suelo, poco en el Cielo, Sp. Much on earth, little in Heaven.

Natura lo fece, e poi ruppe la stampa, It. Nature made him and then broke the mould.
No ay cerradura si es de oro la ganzua, Sp. There is no lock but a golden key will open it.
No es todo oro lo que reluze, Sp. All is not gold that glitters.
Non far il medico tuo herede, It. Never make your physician your heir.
Nulla nuova, buona nuova, It. The best news is no news.

Offrecer mucho, especie es de negar, Sp. To offer much is a kind of denial.
Ogni uno per si medesimo, e Dio por tutti, It. Every man for himself and God for us all.
Olla podrida, Sp. An incongruous mixture.

Per troppo dibatter la verità si perde, It. Truth is lost by too much controversy.
Pietra mossa non fà muschio, It. A rolling stone gets no moss.
Piu tosto mendicante che ignoranti, It. Better be a beggar than ignorant.
Poca robba, poco pensiero, It. Little wealth, little care.
Presto maduro, presto podrida, Sp. Soon ripe, soon rotten.
Presto maturo, presto marzo, It. Soon ripe, soon rotten.
Pronunciamento, Sp. A public declaration.

Questo vento no cribra la biada, It. This wind shakes no corn.
Quien mucho abraza poco aprieta, Sp. Who grasps too much, holds little.
Quien pregunta, no yerra, Sp. Who asks errs not.

Recoje tu heno mientras que el sol luziere, Sp. Make hay while the sun shines.
Remuda de pasturage haze bizerros gordos, Sp. Change of pasture makes fat calves.

Saggio fanciullo è chi cognosce il suo vero padre, It. He is a wise child who knows his own father.
Sempre il mal non vien per nuocere, It. Misfortune does not always come to injure.
Se non è vero, è ben trovato, It. If not true, 'tis well feigned.
Soccorso non venne mai tardi, It. Help never comes too late.
Stavo bene, ma, per star meglio, sto qui, It. I was well, but wishing to be better I am here.

Tanto buon, che val niente, It. So good as to be good for nothing.
Tomava la por rosa, mas devenia cardo, It. I took her for a rose, but she proved a thorn.
Troppo disputare la verità fà errare, It. Too much dispute puts truth to flight.

Una scopa nuova spazza bene, It. A new broom sweeps clean.
Una volta forfante, e sempre forfante, It. Once a knave always a knave.
Un cabello haze sombra, Sp. The least hair makes a shadow.

Vera prosperità è non haver necessità, It. 'Tis true prosperity to have no adversity.
Verdad es verde, Sp. Truth is green.

POETS LAUREATE OF ENGLAND.

Edmund Spenser. Author of "Faery Queen"	1591—1599
Samuel Daniel. Author of "History Civil Wars"	1599—1619
Ben Jonson. Poet and dramatist	1619—1637
William Davenant. Dramatic writer and poet	1660—1668
John Dryden. Well-known poet	1670—1689
Thomas Shadwell. Author of seventeen plays	1689—1692
Nahum Tate. A name nearly forgotten	1692—1715
Nicholas Rowe. Author of "Jane Shore" and "Fair Penitent"	1715—1718
Laurence Eusden. Wrote nothing to be remembered	1718—1730
Colley Cibber. Author of thirty plays	1730—1757
William Whitehead. Wrote seven dramas	1757—1785
Thomas Warton. Author of "History of English Poetry," etc.	1785—1790
Henry James Pye. A pleasant writer of nothing immortal	1790—1813
Robert Southey. Author of many familiar poems	1813—1843
William Wordsworth. Wrote much that is generally known	1843—1850
Alfred Tennyson. One of the brightest of English poets	1850—1893

A CONCISE ACCOUNT OF THE HEATHEN DEITIES, HEROES, &c.

Abaris, A Scythian priest of Apollo.

Abretanus, A surname of Jupiter.

Acantha, A nymph beloved by Apollo.

Acestes, A king of Sicily, who entertained Æneas and Anchises.

Achæmenes, The founder of the Persian monarchy.

Achæus, Son of Xuthus, from whom the Achæans, a Grecian tribe, were descended.

Achates, A trusty friend of Æneas.

Acheron, Son of Sol and Terra, transformed into a river in the infernal regions.

Achilles, Son of Peleus, distinguished for his warlike prowess, and invulnerable except in his right heel; but at length slain by Paris, in the Trojan war.

Acidalia, A surname of Venus, from

Acidalus, A fountain at Orchomenus, where the Graces bathed.

Acmon, A king of the Titans.

Actæon, A celebrated hunter, who, having seen Diana bathing, was changed into a stag and hunted down by his own hounds.

Admantæa, Jupiter's nurse in Crete, who suspended him in his cradle from a tree, that he might be found neither in heaven, in the sea, nor on the earth.

Admetus, A king of Thessaly and husband of Alcestis, so famous for her conjugal heroism.

Adonis, A youth famed for his beauty and beloved by Venus.

Æacus, Son of Jupiter and Ægina, famed for his justice and piety. After death he was made one of the judges in the infernal regions.

Ægeria, See Egeria.

Ægeus, A king of Athens, who gave its name to the Ægean sea, by being drowned in it.

Ægina, Daughter of the river Asopus, a favourite mistress of Jupiter.

Ægis, The shield of Jupiter.

Ægle, I. One of the Hesperides. II. The fairest of the Naiads.

Ægyptus, A king of Arabia, whose fifty sons, with the exception of Synceus, were slain by their wives, the daughters of Danaus.

Æneas, A Trojan warrior, son of Venus and Anchises, celebrated by Virgil in his Æneid. He is distinguished for his pious care of his father at the capture of Troy; and his adventures form the subject of Virgil's Æneid.

Æolus, The god or ruler of the winds, who resided in the Æolian isles.

Æsculapius, Son of Apollo and god of the healing art.

Æthalides, A son of Mercury, permitted to spend one day in Hades, and the next upon earth, alternately.

Ætolus, A son of Endymion, from whom Ætolia was named.

Agamemnon, Brother of Menelaus, and commander of the Grecian forces against Troy.

Aganippe, A fountain at the foot of Mount Helicon.

Ajax, One of the bravest of the Greeks in the Trojan war, a man of great valour, but without corresponding powers of intellect.

Albion, A giant, who with his brother Bergion, endeavoured to prevent Hercules from crossing the Rhone.

Alcestis, Wife of Admetus, brought back from Hell by Hercules.

Alcides, A name of Hercules.

Alcmena, Wife of Amphitryon, and mother of Hercules by Jupiter.

Alcyone, A daughter of Æolus, who drowned herself in grief for her husband, and was turned into a kingfisher.

Alecto, One of the Furies.

Ammon, A title of Jupiter.

Amphion, A Theban prince who cultivated the art of music with great success.

Amphitrite, Daughter of Nereus and Doris, and spouse of Neptune.

Amycus, A king of the Bebrycians, who used to invite strangers into a wood under a false pretence, and then slay them.

Ancæus, A king of the Samians, who, leaving a cup of wine untasted to pursue a boar by which he was killed, gave rise to the proverb "There's many a slip 'twixt the cup and the lip."

Anchises, The father of Æneas.

Andromache, The wife of Hector, distinguished for her domestic virtues.

Andromeda, Daughter of Cepheus. Her mother, Cassiope, having boasted herself fairer than Juno, she was exposed to a sea-monster, but rescued by Perseus.

Antæus, A monarch of Libya, of gigantic size and strength, slain by Hercules.

Anteros, The god who avenges slighted love.

Anubis, An Egyptian god, worshipped under the form of a dog.

Apaturia, I. A festival at Athens. II. A title of Minerva.

Aphrodite, The Greek name of Venus.

Apis, The Egyptian god of industry, worshipped under the form of an ox.

Apollo, A deity of the Greeks and Romans, who presided over the muses. He was also god of medicine, divination, and poetry.

Arachne, A Mæonian maiden, who challenged Minerva to a trial of skill in embroidery, and being insulted by her, killed herself, and was changed into a spider.

Areopagus, The court of Mars at Athens.

Arethusa, Daughter of Nereus, a nymph of great beauty, changed into a fountain when pursued by her lover, Alpheus.

Ariadne, Daughter of Minos, king of Crete, who for the love she bore to Theseus, gave him a clew of thread which guided him safely out of the labyrinth of Crete.

Arion, A famous musician and lyric poet of Methymna.

Aristæus, A son of Apollo and Cyrene, who discovered the use of honey, rennet, oil, etc.

Ascalaphus, A son of Acheron, who, having asserted that Proserpine had eaten a pomegranate-seed in the kingdom of Pluto, was turned into an owl, for mischief-making.

Astræa, The goddess of justice.

Astyanax, Son of Hector and Andromache, slain by the Greeks at Troy.

Ate, The goddess of revenge.

Atlas, A Titan and king of Mauritania, who is said to have supported the world on his shoulders, and was changed into a mountain.

Atropos, One of the Parcæ. Her duty among the three sisters is to cut the thread of life.

Augeas, One of the Argonauts, and afterwards king of Elis. His stables were the scene of the fifth labour of Hercules, who cleansed them from enormous filth, by turning a river through them.

Aurora, The goddess of morning.

Bacchus, The god of wine.

Bellerophon, Son of Glaucus, king of Ephyra, who, being falsely accused by the wife of Prœtus, king of the Argives, was sent with a letter from Prœtus to his father-in-law, commanding him to put the bearer to death. Hence, "Bellerophontis litteræ."

Bellona, The goddess of war, daughter of Phorcys and Ceto, and sister of Mars.

Berenice, A Grecian female, the only one of her sex who was permitted to witness the Olympic games.

Biceps and Bifrons, Names of Janus, because represented with two faces.

Bithiæ, Women of Scythia, said to have two apples in each eye, with which to bewitch and kill people.

Bona Dea, A name given by the Romans to Ops or Tellus, worshipped by the Roman matrons, everything relating to the other sex being carefully excluded.

Briareus, A famous giant, feigned to have had a hundred hands and fifty heads.

Briseis, A beautiful lady who, at the capture of Lyrnessus, fell to the lot of Achilles.

Briseus, A name of Bacchus to signify the discoverer of honey.

Brontes, One of the Cyclops, who forged Jove's thunderbolts.

Busiris, A king of Egypt, who, in consequence of an oracle, offered up strangers on the altar of Jupiter. Slain by Hercules.

Byblis, The daughter of Miletus, who loved her brother, and being avoided by him, wept herself into a fountain.

Cabira *or* Cabiri, A wife of Vulcan.

Cabiri, The offspring of Cabira, worshipped at Thebes and Lemnos.

Cacus, A noted robber, fabled to have had three heads, who stole the oxen of Hercules.

Cadmus, The son of Agenor who, searching in vain for his sister Europa, and being afraid to return without her, remained in Greece and invented sixteen letters of the Greek alphabet.

Caduceus, Mercury's golden rod, represented by the Egyptians in the form of two serpents, knit together in the middle.

Calchas, A famous soothsayer, and prophet of the Greeks in the Trojan war.

Calliope, Mother of Orpheus, and chief of the nine muses.

Callisto, A nymph who attended Diana, changed by her into a bear, and placed by Jupiter among the stars.

Calypso, A nymph who reigned in the island of Ogygia, and entertained Ulysses for eight years.

Camilla, A warlike queen of the Volscians, slain in the war with Æneas.

Camœnæ, A title of the Muses.

Caryalis, A title of Diana, as worshipped at Carya.

Cassandra, Daughter of Priam and Hecuba, whose prophecies the Trojans refused to believe.

Castalides, A name given to the Muses, from

Castalius Fons, A celebrated fountain on Mount Parnassus.

Cecrops, The founder and king of Athens, who first instituted lawful marriage and the interment of the dead.

Centauri (Centaurs), A Thessalian race, fabled to have been half men and half horses.

Cepheus, A king of Ethiopia, father of Andromeda.

Cerberus, The three-headed dog of Pluto, which guarded the gate of Hades.

Ceres, The goddess of grain and harvests.

Charites, A name applied to the three Graces.

Charon, The son of Erebus and Nox, who ferried the souls of the dead over the rivers Acheron and Styx to Hades.

Chimæra, A fabulous monster, slain by Bellerophon.

Chloris, The goddess of flowers.

Circe, A noted sorceress who, by means of an enchanted cup, turned men into swine.

Clio, The Muse who presided over history, represented with a half-opened roll.

Cloacina, A Roman goddess who presided over the sewers.

Clotho, The youngest of the three fates.

Cœlus, One of the earlier deities, and the spouse of Terra.

Comus, The god of festivals and merriment.

Copia, The Roman goddess of plenty.

Creon, A king of Thebes, who promised his sister Jocasta in marriage to whoever would expound the riddle of the Sphinx.

Cupid, The son of Mars and Venus. The god of love.

Cybele, The wife of Saturn, called the mother of the gods.

Cyclops, Giants of enormous strength, who worked for Vulcan. They had but one eye, in the middle of the forehead.

Cycnus, A son of Neptune, whom his father had made invulnerable. He was strangled by Achilles. Also, a son of Mars, killed by Hercules.

Cyparissus, A youth beloved by Apollo, who, having by accident slain a favourite stag, was changed, through grief, into a cypress.

Dædalus, A famous artificer of antiquity, said to have constructed wings, with which to escape from the Cretan labyrinth.

Danae, Daughter of Acrisius, and mother of Perseus.

Danaides, The fifty daughters of Danaus, all of whom, with the exception of Hypermnestra, slew their husbands on their wedding night; for which crime they were doomed eternally to fill with water a tub pierced with holes.

Daphne, A nymph beloved by Apollo, but who chose rather to be changed into a laurel than yield to his wishes.

Dardanus, Son of Jupiter and Electra, who, having slain his brother Jasius, fled into Asia and founded the city of Troy.

Dejanira, The wife of Hercules, who killed herself because she had sent to her husband a shirt dipped in the blood of the centaur Nessus: to escape the agony occasioned by which, he burnt himself on Mount Œta.

Delia and Delius, Names of Diana and Apollo from Delos, where they were born.

Delphi, A city of Phocis, on the hill of Parnassus, where a celebrated oracle of Apollo was.

Deucalion, Son of Prometheus, king of Thessaly, who, with his wife Pyrrha, was preserved in a small boat from a flood which drowned the rest of Greece, and landing on Mount Parnassus, repeopled the country.

Diana, The twin sister of Apollo, who, out of love for chastity, retired to the woods and spent her time in hunting, in company with her nymphs.

Dido, A queen of Carthage, who killed herself because deserted by Æneas.

Diomedes, A king of Thrace, whose horses fed on human flesh; also a Grecian hero, who assisted Ulysses to carry off the Palladium from Troy

Dione, A sea-nymph, and mother of Venus.

Diræ, A name applied to the Furies on account of their cruelty.

Discordia, The goddess of discontent, banished from heaven for exciting divisions among the gods.

Dryades (Dryads), Nymphs who presided over the woods.

Echion, One of those who assisted Cadmus to build Thebes.

Echo, A nymph who fell in love with Narcissus, but, being slighted by him, pined away to a skeleton, having nothing left but her voice.

Egeria, A nymph of Aricia, in Italy, the spouse and instructress of Numa.

Eleusinia, Secret festivals, held at Athens in honour of Ceres, to which none were admitted who had been guilty of any notorious crime.

Elysium, The place assigned for the residence of good men after death.

Endymion, A shepherd whom Cynthia cast into a deep sleep that she might kiss him.

Epeus, Son of Panopeus and fabricator of the wooden horse, by means of which Troy was taken.

Ephialtes, A giant, the son of Neptune, who, with his brother Otus, was hurled by a thunderbolt into the infernal regions, for waging war with heaven.

Erato, The Muse who sings of love and marriage.

Erebus, A dark and gloomy region in the lower world, between Earth and Hades.

Erigone, A daughter of Icarius, who killed herself through grief, because her father, having intoxicated some shepherds, was killed by them.

Erycina, A name of Venus, from Mount Eryx, where she was worshipped.

Etesia, The Etesian winds, which blew from the north for forty days after the setting of the Dog-star.

Eumenides, A name of the Furies.

Europa, The daughter of Agenor, carried off into Crete by Jupiter under the form of a white bull.

Euryale, The daughter of Minos, king of Crete, and mother of Orion.

Eurydice, The wife of Orpheus, to regain whom he descended to the lower world. Pluto yielded to his prayer on condition that he should not look upon her until they reached the light, which condition he was unable to fulfil, and was obliged to return without her.

Euterpe, The Muse who presides over music.

Fabulinus, The god who teaches infants to speak.

Fates, Goddesses who presided over human destiny.

Fauna, A goddess of the Latins, probably identical with the Bona Dea.

Fauni (Fauns), Gods of the fields and woods; the offspring of

Faunus, A rural deity of the ancient Latins.

Februalia, A festival of purification, in the month of February, which lasted twelve days.

Fidius Dius, The god of honour and good faith.

Flora, The goddess of flowers and gardens.

Furies, The goddesses who avenge in the next world the sins committed in this. They are represented armed with snakes and lighted torches.

Gallus, A youth beloved by Mars, and by him changed into a cock.

Ganymede, The son of Tros, and successor of Hebe as cup-bearer of the skies.

Geryon, A giant, whose oxen, after he had killed their master, Hercules carried into Greece.

Gordius, A Phrygian husbandman, who tied the gordian knot, of which it was foretold that whoever loosed it should become king of all Asia. Alexander the Great, being unable to disentangle it, cut the rope with his sword.

Gorgons, The daughter of Phorcys and Ceto, who had power to change men into stone by their aspect only, and had dangling vipers instead of hair.

Graces, Daughters of Jupiter and Eurynome, constantly in attendance on Venus.

Gyges, A king of Lydia; also a shepherd, who found a ring, by means of which he was rendered invisible.

Hades, The place of departed spirits, comprehending both Elysium and Tartarus.

Harpyiæ (Harpies), Winged monsters, having the faces of women, but the bodies, wings, and claws of birds of prey.

Hebe, The goddess of youth, and cup-bearer to the gods, until superseded by Ganymede, on account of her awkwardness.
Hecate, Goddess of the lower regions, the same with Luna in heaven and Diana on earth.
Hector, The son of Priam, and the bravest of the Trojans, but slain by Achilles, who dragged his body round the walls of Troy.
Helena (Helen), A woman of surpassing beauty, who was the cause of the Trojan war by forsaking her husband Menelaus, for Paris, son of Priam.
Helenus, A son of Priam and Hecuba, spared by the Greeks on account of his skill in divination.
Helicon, A hill of Bœotia, sacred to Apollo and the muses.
Hercules, The son of Jupiter and Alcmena, celebrated for his great strength.
Hermæ, Statues of Mercury, in use among the Athenians.
Hermes, Mercury among the Greeks.
Hero, A beautiful priestess of Venus at Sestus, and the mistress of Leander, who used to swim the Hellespont to meet her. In one of the excursions he was drowned.
Hesperides, The daughters of Hesperus, who were commanded by Juno to watch the trees bearing golden apples.
Hippomenes, A Grecian prince, who, by means of the golden apples of Venus, got the start of Atalanta in the race, and so won her.
Hippona, The goddess of horses.
Hyades, Nymphs of Dodona, to whom Jupiter confided the nurture of Bacchus.
Hydra, A water-serpent with fifty heads, killed by Hercules in the marsh of Lerna.
Hygeia, The goddess of health.
Hymen, The god of marriage and nuptial ceremonies.

Iacchus, A surname of the Grecian Bacchus.
Icarus, Son of Dædalus, who escaped from Crete with his father, by means of wings, which fell to pieces when heated by the sun, so that he fell into the sea, called after him, the Icarian sea.
Ilus, A son of Tros and Callirhoë, from whom Troy was called Ilium.
Io, The daughter of Inachus, worshipped by the Egyptians under the name of Isis.
Iphigenia, Daughter of Agamemnon, who, when standing ready to be sacrificed to appease the rage of Diana, was by that goddess carried off to Tauris and made a priestess.
Iris, The messenger of Juno, who transformed her into a rainbow.
Ixion, The father of the centaurs. Having boasted an intimacy with Juno, he was cast into hell, and bound to an ever-revolving wheel.

Janus, The most ancient of the gods in Italy. He entertained Saturn on his arrival in that country, and introduced the use of wines, altars, and temples. He is represented with two faces, looking backward and forward, to denote the past and the future.
Jason, A prince of Thessaly, who, with the aid of Medea, brought away the golden fleece from Colchis.
Juno, Daughter of Saturn, and sister and wife of
Jupiter, The supreme god of the Romans, and the father of men and gods; identical with the Grecian Ζευς (Zeus).

Laius, Son of Labdacus, king of Thebes, and father of Œdipus.
Lamiæ, Fabulous monsters, who assumed the most seductive forms to ensnare young persons, whom they devoured.
Laocoon, A Trojan priest, who, having offended Pallas by piercing with his spear the wooden horse, when brought into Troy, was destroyed by serpents, together with his two sons.
Lares, Gods of inferior power, who presided over houses and families.
Lavinia, The daughter of Latinus, who married Æneas, after his victory over Turnus.
Leander, A youth of Abydos, the lover of Hero.
Leda, The daughter of Thestius, said to have laid two eggs; from one of which came Pollux and Helena, and from the other, Castor and Clytæmnestra.
Lerna, A famous marsh near Argos, where Hercules slew the fifty-headed Hydra.
Lethe, A river of the lower world, whose waters caused a total forgetfulness of the past.
Lucina, The goddess of childbirth.
Lucifer, The name of the planet Venus when seen in the morning.
Lupercalia, A festival of Pan in the month of February.
Luperci, Priest of Pan.
Lycaon, A king of Arcadia, who, having served up for Jupiter, a Molossian hostage, was struck by lightning and turned into a wolf.

Mars, The god of war.
Marsyas, A satyr, who, having challenged Apollo to a trial of skill in music, was defeated and flayed alive by him.
Medea, Daughter of Æetes, king of Colchis, through whose assistance Jason secured the golden fleece.
Medusa, One of the three Gorgons.
Melpomene, The Muse who presided over sad and mournful subjects.
Menelaus, King of Sparta and husband of Helen, whose elopement caused the Trojan war.
Mentor, A faithful friend of Ulysses, and left in charge by him, of his domestic affairs.
Mercury, The messenger of Jupiter, the god of eloquence, the patron of merchants and thieves.
Midas, A foolish king, who entreated Bacchus that everything which he touched might be turned into gold.
Milo, A wrestler who carried an ox the distance of a furlong.
Minerva, The goddess of wisdom and the liberal arts.
Minos, A king and lawgiver of Crete; after death, made a judge in the lower regions.
Momus, The god of ridicule, who censured Venus herself on account of the noise made by her sandals.
Morpheus, The god of sleep and dreams.
Muses, Nine goddesses, who presided over poetry, music, and the liberal arts and sciences. Daughters of Jupiter and Mnemosyne.

Naiads, Nymphs of springs and fountains.

Narcissus, A beautiful youth who slighted the love of Echo and other nymphs, and died for love of his own face as seen in a fountain.

Nemesis, A Greek deity; the personification of the righteous anger of the gods.

Neptune, The god of the sea.

Nereids, Nymphs of the sea.

Nessus, A celebrated Centaur, whose tunic, rendered poisonous by the blood that flowed from his wounds, caused the death of Hercules.

Nestor, The son of Neleus and Chloris, one of the most perfect characters in Homer's Odyssey, distinguished for his wisdom and virtues.

Niobe, The daughter of Tantalus, who wept herself into a stone, through grief at the death of her children.

Occasia, The goddess of opportunity, feigned to have one lock of hair on her forehead, by which she must be seized, if at all.

Oceanus, The most ancient god of the sea, and father of the nymphs presiding over springs and rivers.

Œdipus, A king of Thebes who solved the riddle of the Sphinx, unwittingly killed his father, married his mother, and afterwards ran mad, and tore out his own eyes.

Omphale, A queen of Lydia, for love of whom Hercules became a slave, exchanged his club for a spindle and distaff, and suffered himself to be beaten with her slipper.

Ops, A name of Cybele.

Oreades, Nymphs of the mountains, who accompanied Diana in hunting.

Orpheus, A poet, musician, and philosopher, whose skill in music was fabled to have moved the very rocks and trees.

Orion, A celebrated hunter, changed after death into the constellation of the same name.

Osiris, The son of Jupiter and Niobe, who first taught the Egyptians husbandry, and was worshipped by them under the form of an ox, called Apis.

Ossa, A lofty mountain of Thessaly, once the residence of the Centaurs. It was one of the mountains which the giants, in their wars against the gods, heaped on one another to mount into heaven.

Pæan, A name of Apollo.

Pactolus, A celebrated river of Lydia, in which Midas washed himself when his touch turned everything to gold, and from this it ever after rolled golden sands.

Pales, The goddess of husbandry and feeding cattle.

Palladium, A wooden image of Pallas, on the possession of which, the security of Troy was supposed to depend. It was stolen from Troy by Ulysses and Diomede.

Pan, The god of shepherds, hunters, and country sports.

Pandora, The first created female, endowed by Venus with beauty, and presented by Jupiter with a box, containing all kinds of misfortunes, which she, through curiosity, let loose upon the world; only *hope* remaining at the bottom of the box.

Parcæ, The poetical Fates.

Paris, The son of Priam, king of Troy. He decided the contest of beauty between Juno, Pallas, and Venus, in favour of the latter; who, in return, enabled him to carry off Helen. This act occasioned the Trojan war.

Parthenope, A Syren, who drowned herself because she could not, by the sweetness of her voice, shipwreck Ulysses.

Pegasus, A winged steed, the favourite of the Muses and Apollo.

Penates, Household gods, differing from the Lares, who were of human origin.

Penelope, The wife of Ulysses, who, being pressed by suitors during his absence, made them promise to delay until she finished a web which she was then weaving, and of which she unravelled at night what she wove by day.

Perdix, The nephew of Dædalus, thrown from a tower by his uncle, and changed into a partridge.

Phæton, The son of Phœbus and Clymene, who obtained from his father permission to drive his chariot for a single day; but, being unable to manage the fiery steeds, was hurled by Jupiter into the river Eridanus, to prevent a general conflagration.

Philomela, Daughter of Pandion, King of Athens. She was changed into a nightingale.

Phineus, A king of Thrace, who, having blinded and imprisoned his children on a false accusation, was himself struck blind and tormented by the Harpies.

Phlegyas, A king of the Lapithæ, who, having burnt the temple of Apollo, was placed in hell under a great stone, apparently about to fall at every moment.

Phœbus, A title of Apollo, as god of the sun.

Phœnix, A fabulous bird, mentioned by Herodotus as appearing but once in five hundred years.

Pierides, Name for the Muses; also the daughters of Pierius, changed by the Muses into magpies for challenging them to sing.

Pleiades, The seven daughters of Atlas and Pleione, transformed into the constellation of that name.

Pluto, The god of Hades.

Plutus, The god of wealth, represented as lame in his approach, but winged in his departure.

Polyhymnia, The Muse who presided over singing and rhetoric.

Polyphemus, A giant who had but one eye, in the middle of his forehead, which Ulysses burnt out with a firebrand, having first made him drunk.

Pomona, The goddess of orchards and fruits.

Priam, The last king of Troy, the father of Hector, Paris, etc.

Procrustes, A savage robber, who placed his captives on a couch, and, if too short, stretched them out, but, if too long, cut them off to fit it.

Prometheus, The son of Iapetus, who, having stolen fire from heaven, was bound fast on Mount Caucasus and tormented by a vulture, which fed continually upon his liver.

Proserpine, The wife of Pluto and queen of Hell.

Proteus, One of the gods of the sea, who foretold future events, and possessed the power of transforming himself into various shapes.

Psyche, A nymph beloved by Cupid. She was made immortal by Jupiter.

Pyrrhus, Son of Achilles, and, like his father, cruel and vindictive. He distinguished himself at the siege of Troy.

Python, A huge serpent, killed by Apollo, who instituted the Pythian games in commemoration of the event.

Quadrifrons, Janus, when represented with four faces.

Quinquatria, A festival in honour of Minerva.

Quirinalis, One of the hills of Rome; also a gate of the city.

Quirinus, A surname of Mars among the Romans.

Raxana, A Persian woman taken prisoner by Alexander, who became enamoured of her and married her.

Remus, The brother of Romulus, exposed together with him by the cruelty of his grandfather.

Rhadamanthus, A law-giver of Crete, famous for his justice and equity; whence he is represented as one of the judges in the lower world.

Rhea Silvia, The mother of Romulus and Remus.

Rhodope, A mountain in Thrace, covered all the year with snow.

Romulus, The son of Mars and Rhea Silvia. He was the founder and first king of Rome.

Roscius, A Roman actor of great celebrity.

Rubicon, A small river that separated Italy and Gaul. Julius Cæsar, by crossing it, began the civil wars of his time.

Rubigo, A goddess at Rome, particularly worshipped by husbandmen, as she presided over corn.

Salii, Priests of Mars; twelve in number.

Solmoneus, A king of Elis, struck by lightning for imitating the thunder of Jove.

Sardanapalus, The last king of Syria, whose subjects revolted on account of his effeminacy.

Saturn, The father of Jupiter, who, when banished from the throne of heaven by his son, fled for safety into Italy, and taught the people agriculture and the useful arts. The time in which he did this is called *The Golden Age.*

Saturnalia, Feasts in honour of Saturn, in which great licence was allowed, and slaves were on an equal footing with their masters.

Semele, The mother of Bacchus.

Semiramis, The celebrated Queen of Assyria, who built the walls of Babylon.

Silenus, The foster-father of Bacchus; hideously deformed and addicted to drunkenness, but regarded as the god of abstruse mysteries and knowledge.

Sisyphus, A noted robber, who, for his crimes, was condemned in hell to roll to the top of a hill a huge stone, which constantly fell back upon him.

Somnus, The son of Erebus and Nox, the god of Sleep.

Sphinx, A fabulous monster which put out riddles and devoured all who were unable to solve them; killing herself when Œdipus solved one proposed to him.

Styx, A poisonous stream on the borders of hell, by which the gods swore their most solemn oaths.

Sylvanus, A Roman deity who presided over fields and cattle.

Tantalus, A king of Lydia, who, for his misdeeds, was placed in a lake of water which receded whenever he attempted to drink; and surrounded with all manner of delicious fruits, which always eluded his grasp.

Tartarus, The fabled place of punishment in the lower world.

Telemachus, The only son of Ulysses and Penelope.

Tellus, The most ancient of all the gods after Chaos. She is honoured under the various names of Cybele, Ceres, etc., and is represented as a woman with many breasts distended with milk, to denote the fertility of the earth.

Tempe, A valley of Thessaly, described by the poets as the most delightful spot on the earth.

Terminus, A divinity of Rome, who was supposed to preside over bounds and limits, and to punish all unlawful usurpations of land.

Terpsichore, The Muse who presided over dancing.

Thalia, One of the Muses, who was the patroness of comedy.

Theseus, King of Athens, and one of the most famous heroes of antiquity.

Titan, The son of Cœlus and Vesta, or Terra, who dethroned his brother Saturn and kept him imprisoned until released by his son Jupiter.

Triton, The son of Neptune, and his trumpeter.

Troilus, Son of Priam and Hecuba.

Tyndaridæ, Sons of Tyndarus, viz., Castor and Pollux.

Ulysses, The son of Laertes; the most eloquent, wise, and politic leader of the Greeks in the Trojan war.

Urania, The Muse who presides over astronomy.

Uranus, The most ancient of the gods.

Vacuna, The goddess of rest and ease.

Venus, The goddess of love, gracefulness, beauty, and mirth.

Vertumnus, A deity presiding over the seasons, particularly Spring.

Vesta, A goddess who, like the Greek Hestia, presided over the public and private hearth. Her temple contained a sacred fire, tended by virgins, and never permitted to go out.

Vulcan, The son of Jupiter and Juno, who, with the Cyclops, forged the thunderbolts of Jove. He was the god of fire, and presided over workers in metal.

Xantho, A sea-nymph.

Xanthus, The Scamander, so called among the gods.

Xantippe, The wife of Socrates, remarkable for her ill-humour and peevishness.

Zephyrus, One of the winds, and son of Astræus and Aurora.

Zetes, Son of Boreas and Orithnia, and brother to Calais, together with whom he pursued the Harpies.

Zethus, The son of Jupiter and Antiope, very expert in music.

Zeus, A name of Jupiter.

THE INFLUENCE OF THE MOON ON THE GROWTH OF PLANTS.

Does the light of the moon affect the growth of plants? Does it make any difference in the growth of a plant what time in the moon it is planted? Undoubtedly it does.

Light is a great promoter of growth, and, the more brilliant the light, the stronger and more vigorous the growth, all the other conditions being favourable. It is a fact, also, with certain plants, that when young they require, like young animals, considerable time for rest and sleep. To have this sleep is to give them ultimate strength and vigour, which is essential to their subsequent complete development.

To illustrate: The seeds of certain vines and other plants sown in the new of the moon will vegetate, and the plants are likely to appear above ground, near the old of the moon, at a time when the moon's radiance is so brilliant that they are compelled to grow under its strong light. Upon the rising of the sun, the growth is still forced forward, and the tender plant, thus in its infancy, gets no rest.

The seed sown in the old of the moon will bring forth the plant in the new of the moon, or during the dark nights; at which time it obtains the needed rest and sleep, in the darkness, which is essential to its future productiveness.

That the light of the moon has thus a very perceptible and important influence upon the growth of plants when very young and tender, is a fact which thousands have verified, though few understand the philosophy of the same.

MOST VALUABLE METALS.

The following, according to the *Colliery Engineer*, are the most valuable known metals, nineteen of which are worth more than gold:—

Vanadium.—A white metal, discovered in 1830.

Rubidum.—An alkaline metal, so-called for exhibiting dark red lines in the spectrum analysis.

Zirconium.—A metal obtained from the minerals zircon and hyacinth, in a form of a black powder.

Lithium.—An alkaline metal; the lightest metal known.

Glucinum.—A metal in the form of a greyish black powder.

Calcium.—The metallic base of lime.

Strontium.—A malleable metal of yellowish colour.

Terbium.—Obtained from the mineral gadolinite, found in Sweden.

Yttrium.—Discovered in 1828, is of a greyish black colour, and its lustre perfectly metallic.

Erbium.—The metal found associated with yttrium.

Cerium.—A metal of high specific gravity, a greyish white colour, with a lamellar texture.

Didymium.—A metal found associated with cerium.

Ruthenium.—Of a greyish colour, very hard and brittle, extracted from the ores of platinum.

Rhodium.—Of a white colour and metallic lustre, and extremely hard and brittle. It requires the strongest heat that can be produced by a wind furnace for its fusion.

Niobium.—Previously named columbinum, first discovered in an ore found at New London, Connecticut, U.S.A.

Barium.—The metallic base of baryta.

Palladium.—A metal discovered in 1802, and found in very small grains, of a steel-grey colour and fibrous structure.

Osmium.—A brittle, grey-coloured metal, found with platinum.

Iridium.—Found native as an alloy with osmium in lead-grey scales, and is the heaviest of known substances.

Gold.—Found native in several countries, of great antiquity.

Silver.—A metal found and used since the days of Abraham.

FASTEST SPEED.

Up to 1891 the following was the shortest time consumed in going one mile:—

Object.	Min.	Sec.	Object.	Min.	Sec.
Locomotive	0	50¼	Tricycle	3	3½
Skating	1	5¾	Running Man	4	16¼
Running Horse	1	39¾	Rowing	5	2¾
Trotting Horse	2	9¼	Snow Shoes	5	39¾
Bicycle	2	39	Walking	6	23
Skating	3	0	Swimming	12	42¼

DIFFERENT ALPHABETS.

The number of letters in the alphabets of different nations is a follows:—

Nation.	No. of Letters.	Nation.	No of Letters.
Russian	35	French	25
Turkish	28	Greek	24
Arabic	28	Latin	23
German	26	Hebrew	22
English	26	Persian	22
Spanish	25	Italian	20

FAMOUS TUNNELS.

Name.	Where.	Feet long.	Name.	Where.	Feet long.
Thames	London, England	11,880	Nochistong		21,659
Blaizy		13,455	Hoosac	Mass. and N. Y.	25,080
Nerthe		15.153	Mount Cenis	France and Italy	39,840
Riquivel		18,623	Mount St. Gothard	Hungary	18,840
Sutro	Nevada	21,120			

CLIMATE AND RAINFALL OF VARIOUS CITIES.

Name of City.	Mean Annual Temperature.	Annual Average Rainfall. Inches.	Name of City.	Mean Annual Temperature.	Annual Average Rainfall. Inches.	Name of City.	Mean Annual Temperature.	Annual Average Rainfall. Inches.
Algiers	64·3	27	Florence	59·2	41	Munich	48·4	...
Amsterdam	49·9	...	Geneva	52·7	32	Naples	60·3	30
Astrakhan	50·1	6	Genoa	61·1	47	Paris	51·3	22
Barcelona	63·0	...	Glasgow	49·8	44	Prague	50·2	14
Berlin	48·2	24	Havana	79·1	91	Quebec	40·3	...
Birmingham	48·2	...	Jerusalem	62·6	16	Quito	60·9	...
Bombay	81·3	75	Lima	73·3	...	Rio Janeiro	77·2	29
Bordeaux	57·0	30	Lisbon	61·4	27	Rome	60·5	31
Brussels	50·7	29	London	50·8	25	Rotterdam	51·0	23
Buenos Ayres	62·8	...	Madrid	58·2	9	St. Domingo	81·3	108
Cairo	72·2	...	Manchester	48·8	36	St. Petersburg	39·6	17
Calcutta	82·4	76	Manilla	78·4	...	Stockholm	42·3	20
Cayenne	...	116	Maranham	...	277	Sydney	65·8	49
Cherrapongee	...	610	Marseilles	58·3	23	Valparaiso	64·0	...
Christiania	41·5	...	Melbourne	57·0	29	Venice	55·4	...
Constantinople	56·5	...	Mexico	60·9	...	Vera Cruz	77·0	180
Copenhagen	46·6	19	Milan	55·1	38	Vienna	51·0	19
Dublin	50·1	29	Montreal	44·6	...	Warsaw	56·2	...
Edinburgh	47·1	38	Moscow	40·0	...			

NOTE.—The mean annual temperature of the globe is 50° Fahrenheit. The average rainfall is 36 in.

DIFERENT NATIONS, THE NAME OF THEIR PEOPLE, AND THE LANGUAGE THEY SPEAK.

Country	Name of People.	Language they Speak.	Country.	Name of People.	Language they Speak.
Austria	Austrians	German, Hungarian, and Slavonic.	Greece	Greeks	Greek.
Arabia	Arabs, Arabians	Arabic.	Holland	Dutch	Dutch.
Afghanistan	Afghans	Persian and Hindoostanee.	Hindostan	Hindoos	Hindostanee and others.
Algeria	Algerines	Chiefly Arabic.	Iceland	Icelander's	Icelandic.
Abyssinia	Abyssinians	Abyssinian.	Ireland	Irish	English and Irish
Australasia	Australasians	Dutch and English. Various native languages are spoken.	Italy	Italians	Italian.
Brazil	Brazilians	Portuguese.	Japan	Japanese	Japanese.
Bolivia	Bolivians	Spanish.	Mexico	Mexicans	Spanish.
Belgium	Belgians	Flemish and French.	Norway	Norwegians	Danish.
Beloochistan	Beloochees	Beloochee and Hindoostanee.	Poland	Poles	Polish.
Canada	Canadians	English and French.	Peru	Peruvians	Spanish.
Chili	Chilians	Spanish.	Paraguay	Paraguayans	Spanish.
China	Chinese	Chinese.	Prussia	Prussians	German.
Denmark	Danes	Danish.	Portugal	Portuguese	Portuguese.
Egypt	Egyptians	Chiefly Arabic and Italian.	Persia	Persians	Persian.
England	English	English.	Russia	Russians	Russian.
East Indies	East Indians	Hindoostanee, Bengalee, Siamese, Malay, etc.	Sweden	Swedes	Swedish.
France	French	French.	Switzerland	Swiss	German, French, and Italian.
Greenland	Greenlanders	Danish and Esquimaux.	Spain	Spaniards	Spanish.
Germany	Germans	German.	Siberia	Siberians	Russian (mostly).
			Siam	Siamese	Siamese.
			Scotland	Scotch	English and Gaelic.
			Turkey	Turks	Turkish.
			United States	Americans	English.
			Venezuela	Venezuelans	Spanish.
			West Indies	West Indians	Spanish.
			Wales	Welsh	English and Welsh

LOSSES IN GREAT BATTLES OF THE WORLD, INCLUDING THE AMERICAN REVOLUTION.

Battles.	Date.	Losses. Number of Men.	Battles.	Date.	Losses. Number of Men.
Leipzig, Saxony . .	Oct. 1813	100,000	Bannockburn, Scotland .	1314	30,000
Waterloo, France . .	June 1815	53,000	Friedland, Prussia . .	1807	25,000
Eylau, Prussia . . .	Feb. 1806	50,000	Hohenlinden, Bavaria .	1800	23,000
Austerlitz, Moravia . .	Dec. 1815	42,000	Ligny, France . .	June 1815	19,000
Syracuse, Sicily . .	B.C. 413	40,000	Marengo, Italy . .	1800	18,000
Hastings, England . .	1066	30,000	Yorktown, Virginia .	1781	8,587
Towton, England . .	1461	30,000	New Orleans, La. . .	1815	2,000
Jena, Germany . .	Oct. 1806	30,000	Bunker's Hill, Mass. .	1775	1,503

AMOUNT OF OIL IN SEEDS.

The amount of oil in a certain seed will vary according to conditions of growth. In a scale of 100 this is considered about an average per cent.

Kind of seeds.	Per cent. of Oil.	Kind of seeds.	Per cent. of Oil.	Kind of seeds.	Per cent. of Oil.
Rapeseed	55	Linseed	17	Meadow hay . . .	3½
Sweet almond . . .	47	Indian corn	7	Wheat straw . . .	3
Turnip seed	45	Oats	6½	Wheat flour . . .	3
White mustard . . .	37	Clover hay	5	Barley	2½
Bitter almond . . .	37	Wheat bran	4	Potatoes, turnips, cabbages .	1½
Hempseed	19	Oat straw	4		

CANNING FRUIT.

A general rule for the canning of fruit is to add one pound of sugar to four pounds of fruit, and water sufficient to keep it from burning. If the fruit be very tart, more sweet may be added if desired. Whether glass or tin, the cans must, of course, be air-tight. The following gives the requisite time for boiling and the amount of sugar it is well to add at the time of canning.

Fruit.	Time for boiling. Min.	Quantity of sugar per quart. Oz.
Small pears, whole . . .	30	8
Siberian apples	25	8
Bartlett pears	20	6
Tomatoes	20	None.
Quinces, sliced	15	10
Pine apples, sliced	15	6
Peaches, whole	15	4
Pie-plant, sliced	10	10
Plums	10	8
Wild grapes	10	8
Sour apples	10	5
Blackberries	9	6
Strawberries	8	8
Gooseberries	8	8
Peaches, halved	8	4
Ripe currants	6	8
Raspberries	6	4
Cherries	5	6
Whortleberries	5	4

CANNOT READ OR WRITE.

The per cent. of illiteracy in the scale of 100, among the people of different countries, is shown in the following table, compiled expressly for OGILVIE'S ENCYCLOPÆDIA :—

Country.	Year.	Per cent. of Illiteracy.
India . . .	1871	95
Mexico . .	Recent	93
Poland . .	Recent	91
Russia . .	Recent	91
Argentine Rep. .	Recent	83
Greece . .	Recent	82
Italy . . .	1861	73
Hungary . .	Recent	51
China . . .	Recent	50
Austria . .	Recent	49
Ireland . .	Recent	46
England . .	Recent	33
Belgium . .	Recent	30
France . .	1872	30
Netherlands .	Recent	18
Scotland . .	Recent	16
United States .	1890	13
Japan . .	Recent	10

SUMMARY OF THE BIBLE.

The following table is published as containing accurate particulars of the English version of the Bible :—

In the Old Testament.

Letters .	2,728,100
Words .	592,493
Verses .	23,214
Chapters .	929
Books . .	39

In the New Testament.

Letters .	838,380
Words .	181,253
Verses .	7,959
Chapters .	260
Books . .	27

Total.

Letters .	3,566,480
Words .	773,746
Verses .	31,173
Chapters	1,189
Books . .	66

AREA AND POPULATION OF THE EARTH.

Divisions.	Area in Sq. Miles.	Population.	Pop. to Sq. Mile.
America	15,258,686	100,415,400	6·6
Europe	3,700,000	327,743,400	88·6
Asia	16,770,000	795,591,000	47·4
Africa	12,000,000	205,823,200	17·1
Australasia	3,156,841	2,862,103	
Other Countries		1,452,397	
Total . . .	50,885,527	1,433,887,500	28·1

Another estimate of the earth's population is as follows:—

Races.	
Whites	600,000,000
Mongolians	600,000,000
Blacks	250,000,000
Copper-coloured	12,000,000

Religions.	
Pagans	810,600,000
Christians	388,000,000
Mohammedans	201,000,000
Jews	7,000,000
All Infidels (Est.)	93,387,500

The Christians are divided as follows:—

Church of Rome.	Protestants.	East and Greek Church.
201,000,000.	106,000,000.	81,000,000.

All these collectively are estimated to speak more than 3,000 languages.

The amount of deaths per annum is 33,333,333, or 91,954 per day, 3,730 per hour, 60 per minute, or 1 per second. It is estimated that the population of the earth, at the present time, is being increased at the rate of about 16,500,000 annually.

The average duration of life throughout the globe is 33 years. One-fourth of its population dies before the seventh year, and the half before the seventeenth. Out of 10,000 persons only one reaches his hundredth year; only one in 500 his eightieth; and only one in 100 his sixtieth.

FACTS ABOUT HUMAN LIFE.

Long life, as a general rule, awaits the man who is gifted with prudence, a good constitution, and the mental potency to banish corroding anxiety. These are inestimable gifts. Dr. Heberden, an illustrious London physician of the last century, whose practice lay chiefly among the wealthy classes, asserted that nine out of ten of his patients died of a broken heart. Cornaro, the noted dietist, who by prudent care of himself lived to 104, wrote, "I am likewise greatly indebted for the excellent health I enjoy to that calm and temperate state in which I have been careful to keep my passions. The influence of the passions on the nerves and health of our bodies is so great that none can be ignorant of it. He, therefore, who seriously wishes to enjoy good health must learn to keep his passions in subjection to reason. Otherwise, all temperance will go for little." The man endowed by nature with the best prospect for long life is thus described by the famous Hufeland, in his work on longevity:—"He has a well-proportioned stature, without, however, being too tall. He is rather of the middle size, and somewhat thickset. His complexion is not too florid; at any rate, too much ruddiness in youth is seldom a sign of longevity. Hair approaches rather to the fair than to the black. His skin is strong, but not rough. His head is not too big. He has large veins at the extremities, and his shoulders are rather round than flat. His neck is not too long. His belly does not project, and his hands are large, but not too deeply cleft. His foot is rather thick than long, and his legs are firm and round. He has also a broad chest and strong voice, and the faculty of retaining his breath a long time without difficulty. In general there is complete harmony in all his parts. His senses are good, but not too delicate. His pulse is slow and regular. His appetite is good, and his digestion easy. He has not too much thirst, which is always a sign of rapid self-consumption. His passions never become too violent or destructive. If he gives way to anger he experiences a glow of warmth, without an overflowing of the gall. He likes employment, particularly calm meditation and agreeable speculations; is an optimist, a friend of nature and domestic felicity—has no thirst after either honours or riches, and banishes all thought of to-morrow."

Mr. John Q. Adams was in excellent health, when, in his ninetieth year, he was visited by Charles Mackay, who thus explains the cause:—

"Men and women," he says, "scarcely ever allow the fresh air of heaven to touch any part of their bodies, except their hands and face, and even to these the ladies are systematically unjust by wearing gloves and veils. The surface of the beautiful human form requires to be for a certain period of every day exposed to the action of the atmosphere. I take my air-bath regularly every morning, and walk in my bedroom *in puris naturalibus*, with all the windows open, for half-an-hour. I also take a water bath daily. I read and write for eight hours a day. I sleep eight hours, and devote another eight to exercise, conversation, and meals. I feel within myself a reserve of bodily strength, which, I think, will carry me to a hundred years, unless I die by accident, or am shot or hanged."

Between 1840 and 1871 the annual mortality on the Cheviot Hills, in Scotland, was at an average of 15 per 1,000. In the hamlet of Harbottle, with 120 inhabitants, there was no death of a child for 20 years. A farmer and his three shepherds, who occupied their situation nearly thirty years, had among them 47 children, and not a single death occurred in these families. In Alwinton, a parish on the southern slopes of the hills, the birth-rate in 1871, when it contained a population of 1,205, was 32·4 per cent., and the death-rate only 7·5. An abundance of good food, good water, good houses, and regular but not severe work, have brought about this orderly state of existence.

Of a man who died near London at the advanced age of 110 years, it is reported that he had never been ill, and that he had maintained through life a cheerful happy temperament. He was uniformly kind and obliging to everybody; he quarrelled with no one; he ate and drank merely that he might not suffer from hunger and thirst, and never beyond what necessity required. From his earliest youth he never allowed himself to be unemployed. These were the only means he ever used.

Of a woman who died near Stockholm at the advanced age of 115 years, it is on record that she passed her long life free from illness, always contented and happy, a devoted lover of cleanliness, had a daily habit of washing her face, hands, and feet in cold water, and as often as opportunity afforded, bathed in the same; she never ate or drank any delicacies or sweetmeats; seldom tea or coffee, and never wine.

Another noted instance of long life was that of a man who died near St. Petersburg, and had enjoyed good health until he was 120 years old. He was an early riser, and never slept more than seven hours at a time; he was never idle; he worked and employed himself chiefly in the open air and particularly in his garden. Whether he walked or sat in his chair he always maintained an erect position, never tolerating a stooping, leaning, or distorted attitude.

Unquestionably, a properly selected vegetable diet is the best fitted for the maintenance of health. A great percentage of the diseases which afflict humanity are generated by the use of pork, veal, and other meats in immoderate quantities, and prepared in preposterous forms with lard, rich sauces, seasoning, etc. Of all animal food in common use pork is decidedly the worst. Its use as food frequently engenders an extremely painful disease, by many pronounced incurable, caused by a filthy parasite which exists naturally in the muscles of swine. Pork grease will ruin a waggon axle, much more the human stomach, and the man who uses pork alone as a meat diet and pork grease as *shortening*, ruins not only his own constitution but that of his family as well. This is the experience of a farmer who has tried the use of pork for over fifteen years, with as many years of sickness in his family, and two years on beef diet and perfect health. Vegetable aliment, as neither distending the vessels, nor loading the system, never interrupts the stronger action of the mind; while the heat, fulness, and weight of animal food is adverse to its efforts. Probably the best thing to take to regulate the system and overcome the effects of heavy eating is "Garfield Tea," which can be had of all chemists, and is highly recommended.

FACTS CONCERNING FOOD.

The following digest shows the number of grains of warmth and strength evolved per lb., from various articles of food. The carbon and nitrogen taken into the system form fat and flesh; the fat being consumed makes the body stout, while the flesh represents strength or the muscles which yield it:—

Grains of Strength yielded by One Pound of 7,000 *Grains.*—Beer or porter, 1 gr.; parsnips, 12; turnips, 12; whey, 13; greens, 14; potatoes, 24; skimmed milk, 34; new milk, 35; buttermilk, 35; barley, 70; rice, 70; bacon, 78; rye bread, 89; baker's bread, 90; pearl barley, 91; fresh pork, 108; seconds flour, 120; corn meal, 125; fresh fish, 129; cocoa, 130; oatmeal, 140; mutton, 140; fresh beef, 172; beef liver, 200; split peas, 250; cheddar cheese, 310; skimmed milk cheese, 360.

Grains of Warmth yielded by One Pound of 7,000 *Grains.*—Whey, 150 grs.; turnips, 238; beer and porter, 315; buttermilk, 335; skimmed milk, 351; new milk, 378; carrots, 390; parsnips, 425; potatoes, 770; fresh fish, 980; beef liver, 1,220; red herrings, 1,455; baker's bread, 1,990; fresh beef, 2,300; molasses, 2,300; skimmed milk cheese, 2,350; cheddar cheese, 2,550; seconds flour, 2,700; rye bread, 2,700; rice, 2,750; barley meal, 2,780; Indian meal, 2,800; sugar, 2,900; fresh pork, 3,100; bacon, 4,200; butter, 4,700; lard, 4,800; drippings, 5,500.

In cookery 4 lbs. of beef lose 1 lb. by boiling, 1 lb. 5 ozs. by roasting, and 1 lb. 3 ozs. by baking; 4 lbs. of mutton lose 14 ozs. by boiling, 1 lb. 6 ozs. by roasting, and 1 lb. 4 ozs. by baking.

DATES OF ENGLISH TRANSLATIONS OF THE BIBLE.

Translation.	Date.
Saxon Translation of the Psalms	709
Saxon Translation of the Gospel	721
Bede's Translation of the entire Bible	725
English Translation	1290
Tyndale's New Testament	1526
Tyndale's Pentateuch	1530
The Great, or Cromwell Bible	1539
Cranmer's Edition of the Great Bible	1540
Geneva Bible	1560
Parker's, or the Bishop's Bible	1568
The Gospels, in Saxon and English	1571
Genevan Bible	1576
First Roman Catholic Bible in England	1609
The Royal, or King James' Bible	1611
The "Wicked" Bible	1632
Walton's Polyglot Bible	1657
Wyckliffe's Bible	1850
American Bible Union Translation (Baptist)	1869
The "Speaker's Commentary"	1878
Anglo-Saxon Edition, New Testament	1881
Anglo Saxon Edition, Old Testament	1881

AVERAGE HEIGHT AND WEIGHT OF HUMAN BEINGS, AT DIFFERENT AGES.

MALES.			MALES.			FEMALES.			FEMALES.		
Age.	Feet.	Lbs.	Age.	Feet.	Lbs.	Age.	Feet.	Lbs.	Age.	Feet.	Lbs.
Birth	1⅔	7	18 years	5½	127½	Birth	1⅔	6½	18 years	5	112½
2 years	2⅔	25	20 years	5½	122½	2 years	2½	23½	20 years	5½	115⅓
3 years	3	31⅓	30 years	5½	140⅓	3 years	3	28⅔	30 years	5½	119⅘
6 years	3½	38⅕	40 years	5½	140½	6 years	4	25⅓	40 years	5½	121⅘
9 years	4	50	50 years	5⅓	140	9 years	4	47	50 years	5	123⅘
11 years	4⅓	59¾	60 years	5⅓	136	11 years	4¼	56½	60 years	5	119¾
13 years	4¾	16⅕	70 years	5⅓	131¼	13 years	4⅗	72⅔	70 years	5	113½
15 years	5	76½	80 years	5⅓	127½	15 years	5	89	80 years	5	108⅘
17 years	5⅓	116½	90 years	5⅓	127½	17 years	5	104⅓	90 years	5	108⅘

THE PULSE IN HEALTH.

New-born infants	From 140 down to 130.
During 1st year	From 130 down to 115.
During 2nd year	From 115 down to 100.
During 3rd year	From 105 down to 95.
From 7th to 14th year	From 90 down to 80.
From 14th to 21st year	From 85 down to 75.
From 21st to 60th year	From 75 down to 70.
In old age	From 75 up to 80.

CAPACITY OF CISTERNS.

In calculating the capacity of cisterns, 31½ gallons are estimated to one barrel and 63 gallons to one hogshead.

Circular Cistern one foot in depth.

5 feet in diam. holds	4½ barrels.
6 feet in diam. holds	6¾ barrels.
7 feet in diam. holds	9 barrels.
8 feet in diam. holds	12 barrels.
9 feet in diam. holds	15 barrels.
10 feet in diam. holds	18½ barrels.

Square Cistern one foot in depth.

5 feet by 5 feet holds	6 barrels.
6 feet by 6 feet holds	8½ barrels.
7 feet by 7 feet holds	11½ barrels.
8 feet by 8 feet holds	15¼ barrels.
9 feet by 9 feet holds	19½ barrels.
10 feet by 10 feet holds	23¾ barrels.

AUDIBLE SOUNDS.

The distance at which sounds can be distinguished depends much on favouring winds.

Description of Sound.	Feet.	Miles.
A powerful human voice in the open air and no wind	460	...
Beating a drum	10,560	2
Music of a heavy brass band	15,840	3
A strong human voice with a breeze barely felt	15,840	3
Report of a musket	16,000	3
Cannonading very strong	475,000	90

BAIT FOR DIFFERENT GAME.

Animal.	Bait Required.	Animal.	Bait Required.
Squirrel	Grain, nuts, or ear of corn.	Raccoon	Chicken, fish, or frog.
Muskrat	Carrots, potatoes, apples, etc.	Badger	Mice, or flesh of any kind.
Woodchuck	Roots, fruit, corn, or bread.	Otter	Fish, piece of a bird, or otter musk.
Mink	Fowl, flesh, or roasted fish.	Marten	Head of a fish, piece of meat, or fowl.
Skunk	Mice, meat, piece of a fowl.	Beaver	Fresh roots.
Fox	Fowl, flesh, fish, toasted cheese.	Wolf	Waste parts of tame or wild fowl.
Opossum	Nuts, corn, mice, piece of fowl.		

WEIGHTS AND MEASURES FOR COOKS.

1 lb. of Wheat Flour is equal to	1 quart
1 lb. 2 oz. Indian Meal make	1 quart
1 lb. of Soft Butter is equal to	1 quart
1 lb. of Broken Loaf Sugar is equal to	1 quart
1 lb. 2 oz. of Best Brown Sugar make	1 quart
1 lb. 1 oz. of Powdered White Sugar make	1 quart
10 Eggs make	1 pound
4 Large Tablespoonfuls make	½ gill
1 Common-sized Tumbler holds	½ pint
1 Common-sized Wine-glass is equal to	½ gill
1 Tea-cup holds	1 gill
1 Large Wine-glass holds	2 ounces
1 Tablespoonful is equal to	½ ounce

FAMILIAR QUOTATIONS.

The following selection of epigrams, proverbs, wise sayings, and original conceptions include some of the brilliant passages of standard authors—gleams of sunlight which here and there flash through the foliage of thought—as well as many gems of anonymous origin. They will be found not only full of entertainment and instruction, but useful where a pertinent quotation is required to illustrate ideas either in speech or writing.

WORDS OF WIT AND WISDOM.

'Tis strange the miser should his care employ,
To gain those riches he can ne'er enjoy.—*Pope.*

If you would not have affliction visit you twice, listen at once to what it teaches.

Some sort of charity will swallow the egg and give away the shell.

A word of kindness is seldom spoken in vain. It is a seed which, even when dropped by chance, springs up a flower.

Mean souls, like mean pictures, are often found in good-looking frames.

A child is eager to have any toy he sees, but throws it away at the sight of another, and is equally eager to have that. We are most of us children through life, and only change one toy for another from the cradle to the grave.

Learning is wealth to the poor, an honour to the rich, an aid to the young, and a support and comfort to the aged.

Love is the strongest holdfast in the world; it is stronger than death.

Hope and fear, peace and strife,
Make up the troubled web of life.

False friendship, like the ivy, decays and ruins the wall it embraces; but true friendship gives new life and animation to the object it supports.—*Burton.*

A man who hoards riches and enjoys them not is like the ass which carries gold yet eats thistles.

People should remember that it is only great souls that know how much glory there is in doing good.

Happiness is a perfume that one cannot shed over another without a few drops falling upon himself.

With love the heart becomes a fair and fertile garden, glowing with sunshine and warm hues, and exhaling sweet odours; but without it, it is a bleak desert covered with ashes.

Prosperity is no just scale, adversity is the only true balance to weigh friends.

To discover what is true, and to practise what is good, are the two most important objects of life.

Life has its hours of bitterness,
Its joys, its hopes, and fears;
Our way is sometimes wreathed with smiles,
And then baptized with tears.

Prosperity is not without its trouble, nor adversity without its comfort.

As riches and favour forsake a man we discover him to be a fool, but nobody could find it out in his prosperity. —*Bruyère.*

Troubles are like babies—they only grow bigger by nursing.

You cannot injure anyone by elevating poor fallen humanity. It is the noblest work man can engage in, not only to elevate himself but to elevate others.

Happiness is a butterfly, which, when pursued, is always just beyond your grasp, but which, if you will sit down quietly, may come and alight on you.

Purchase not friends with gifts; when thou ceasest to give, such will cease to love.—*Fuller.*

By humility, and the fear of the Lord, are riches, and honour and life.—*Proverbs.*

Life appears to be too short to be spent in nursing animosities or registering wrongs.

If thou wouldst be borne with, bear with others.—*Fuller.*

Mothers who have a disposition to punish their children should recollect that a little warm sunshine will melt an icicle much sooner than a regular blizzard.

A wise man knows his own ignorance; a fool thinks he knows everything.

Cyrus, the conqueror of Babylon, of whom we read in the Bible, was once asked what was the first thing he learned. "To tell the truth," was the reply.

Every man can and should do something for the public, if it be only to kick a piece of orange-peel into the road from the pavement.

A rich man who is not liberal resembles a tree without fruit.

Whoso hath this world's goods, and seeth his brother hath need, and shutteth up his bowels of compassion from him, how dwelleth the love of God in him?—1 *John.*

How brightly do little joys beam upon a soul which stands on a ground darkened by clouds of sorrow! So do stars come forth from the empty sky when we look up to them from a deep well.

It is not going into the furnace, but the coming out, which demonstrates the metal.

Indulging in dangerous pleasures, saith a Burmese proverb, is like licking honey from a knife and cutting the tongue with the edge.

There are more poor willing to give charity from their necessity than rich from their superfluities.

Wealth does not always improve us. A man as he gets to be worth more may become worth-less.

The greatest friend of truth is time, her greatest enemy prejudice, and her constant companion is humility. —*Colton.*

Beauty unaccompanied by virtue is a flower without perfume.

Virtue, like a dowerless beauty, has more admirers than followers.

Never trouble trouble till trouble troubles you.

Every good deed is a benefit to the doer as sure as to the receiver.

We should value affliction as we do physic—not by its taste, but by its effects.

He that giveth unto the poor shall not lack, but he that hideth his eyes shall have many a curse.—*Proverbs.*

Most of the shadows that cross our pathway through life are caused by our standing in our own way.

Avarice is like a graveyard; it takes all that it can get and gives nothing back.

It is not wealth, but wisdom, that makes a man rich.

Virtue, like a rich stone, looks best when plainest set.

The duties and burdens of life should be met with courage and determination. No one has a right to be a wart on the fair face of nature, doing nothing useful, producing nothing of utility or value. It is a gross and fatal error to suppose that life is to be enjoyed in idleness. It can never be.

If a man be gracious to strangers, it shows he is a citizen of the world, and that his heart is no island cut off from the other lands, but a continent that joins them. —*Bacon.*

True friendship is like sound health, the value of it is seldom known until it is lost.

All our affections are but so many doors to let in Christ.

Much wanted more, and lost all.

Troubles are like hornets, the less ado you make about them the better, for your outcry will only bring the whole swarm upon you.

God lays us upon our backs that we may look heavenward.

The more liberal we are to others from a principle of faith and love, the more liberal God will be to us.

The flowers that breathe the sweetest perfume into our hearts bloom upon the rod with which Providence chastises us.

Be not stingy of kind words and pleasing acts, for such are fragrant gifts, whose perfume will gladden the heart and sweeten the life of all who hear or receive them.

Rare as is true love, true friendship is still rarer.—*Rochefoucauld.*

Learning by study must be won;
'Twas ne'er entailed from sire to son.—*Gay.*

The violet grows low, and covers itself with its own tears, and of all flowers yields the sweetest fragrance. Such is humility.

We should not forget that life is a flower, which is no sooner fully blown than it begins to wither.

He who has other graces, without humility, is one who carries a box of precious powder without a cover on a windy day.

Heaven's gates are not so highly arched as princes' palaces. They that enter there must go upon their knees.—*Webster.*

God strikes not as an enemy to destroy, but as a father to correct.

This may be said of love, that if you strike it out of the soul, life would be insipid and our being but half animated.

It is better to be poor, with a good heart, than rich, with a bad conscience.

From the walks of humble life have risen those who are the lights and landmarks of mankind.

The universal lot,
To weep, to wander, die, and be forgot.
—*Sprague.*

The path of sorrow, and that path alone,
Leads to the land where sorrow is unknown;
No traveller ever reached that blest abode,
Who found not thorns and briars in his road.
—*Cowper.*

He that does good for good's sake seeks neither praise now reward, though sure of both at last.

Living in the fear of God takes away the fear of death; for the sting of death is sin.

Nothing is more dangerous than a friend without discretion; even a prudent enemy is preferable.—*La Fontaine.*

The grand essentials to happiness in this life are, something to do, something to love, and something to hope for.

He that has never known adversity is but half acquainted with others, or with himself. Constant success shows us but one side of the world; for, as it surrounds us with friends, who will tell us only our merits, so it silences those enemies from whom only we can learn our defects.—*Colton.*

Base all your actions upon a principle of right; preserve your integrity of character, and, doing this, never reckon the cost.

Adversity is the trial of principle. Without it a man hardly knows whether he is honest or not.—*Fielding.*

Never be cast down by trifles. If a spider break his web twenty times, twenty times will he mend it. Make up your mind to do a thing and you will do it.

A covetous man lives without comfort, and dies without hope.

Whoso stoppeth his ear at the cry of the poor, he also shall cry himself, but shall not be heard.—*Proverbs.*

Value the friendship of him who stands by you in storms. Swarms of insects will surround you in sunshine.

Pleasures have honey in the mouth, but a sting in the tail, and often perish in the budding.

Religion teaches the rich humility, and the poor contentment.

It is far more easy to acquire a fortune like a knave, than to expend it like a gentleman.—*Colton.*

Excesses in our youth are drafts upon our old age, payable, with interest, about thirty years after date.

Riches and true excellence are seldom found together.

The use of money is all the advantage there is in having it.

Truth is a mighty weapon when wielded by the weakest arm.—*Fletcher.*

Delays have dangerous ends.—*Shakespeare.*

Smooth runs the water where the brook runs deep.—*Ibid.*

Uneasy lies the head that wears the crown.—*Ibid.*

The ripest fruit first falls.—*Ibid.*

How bitter a thing it is to look into happiness through another man's eyes.—*Ibid.*

I cannot tell what the dickens his name is.—*Ibid.*

Don't put too fine a point to your wit for fear it should get blunted.—*Cervantes.*

Every one is the son of his own works.—*Ibid.*

Better late than never.—*Thomas Tusser.*

At Christmas play, and make good cheer,
For Christmas comes but once a year.—*Ibid.*

A rolling stone gathers no moss.—*Gosson.*

One half the world knoweth not how the other half liveth.—*Rabelais.*

Man proposes and God disposes.—*Thomas Kempis.*

Of two evils the less is always to be chosen.—*Thomas Kempis.*

The tree of liberty only grows when watered by the blood of tyrants.—*Bertrand Barere.*

Millions for defence, but not one penny for tribute.—*Charles Pinckney.*

All men are created equal.—*Jefferson.*

Man wants but little here below, nor wants that little long.—*Goldsmith.*

Ask me no questions and I'li tell you no fibs.—*Ibid.*

MASTERPIECES OF ELOQUENCE.

The following masterpieces of elegiac eloquence are unsurpassed in the repertory of the English classics, for lofty and noble sentiment, exquisite pathos, vivid imagery, tenderness of feeling, glowing power of description, brilliant command of language, and that immortal and seldom attained faculty of painting in the soul of the listener or reader a realistic picture whose sublimity of conception impresses the understanding with awe and admiration, and impels the mind to rise involuntarily for the time to an elevation out of and above the inconsequent contemplation of the common and sordid things of life.

AT A BROTHER'S GRAVE.

The following grand oration was delivered by Hon. Robert G. Ingersoll on the occasion of the funeral of his brother, Hon. Eben C. Ingersoll, in Washington, U.S. :—

"My friends, I am going to do that which the dead oft promised he would do for me. The loved and loving brother, husband, father, friend, died where manhood's morning almost touches noon, and while the shadows were still falling towards the west. He had not passed on life's highway the stone that marks the highest point, but being weary for a moment he lay down by the wayside, and using his burden for a pillow fell into that dreamless sleep that kisses down the eyelids. Still, while yet in love with life and raptured with the world, he passed to silence and pathetic dust. Yet, after all, it may be best just in the happiest, sunniest hour of all the voyage, while eager winds are kissing every sail, to dash against the unseen rock and in an instant to hear the billows roar, 'A sunken ship;' for whether in mid sea or among the breakers of the farther shore, a wreck must mark at last the end of each and all, and every life, no matter if its every hour is rich with love, and every moment jewelled with a joy, will at its close become a tragedy as sad and deep and dark as can be woven of the warp and woof of mystery and death. This brave and tender man in every storm of life was oak and rock, but in the sunshine he was vine and flower. He was the friend of all heroic souls. He climbed the heights and left all superstitions far below, while on his forehead fell the golden dawning of a grander day. He loved the beautiful, and was with colour, form, and music touched to tears. He sided with the weak, and with a willing hand gave alms. With loyal heart, and with the purest hand he faithfully discharged all public trusts. He was a worshipper of liberty and a friend of the oppressed. A thousand times I have heard him quote the words, 'For Justice all place temple, and all seasons summer.' He believed that happiness was the only good, reason the only torch, justice the only worshipper, humanity the only religion, and love the priest. He added to the sum of human joy, and were everyone for whom he did some loving service to bring a blossom to his grave, he would sleep to-night beneath a wilderness of flowers. Life is a narrrow vale between the cold and barren peaks of two eternities. We strive in vain to look beyond the heights. We cry aloud, and the only answer is the echo of our wailing cry. From the voiceless lips of the unreplying dead there comes no word, but the light of death. Hope sees a star, and listening love can hear the rustle of a wing. He who sleeps here when dying, mistaking the approach of death for the return of health, whispered with his latest breath, 'I am better now.' Let us believe, in spite of doubts and dogmas, and tears and fears, that these dear words are true of all the countless dead. And now, to you who have been chosen from among the many men he loved to do the last sad office for the dead, we give his sacred dust. Speech cannot contain our love. There was, there is, no gentler, stronger, manlier man."

AT THE GRAVE OF A CHILD.

Colonel Ingersoll upon one occasion was one of a little party of sympathising friends who had gathered in a drizzling rain to assist the sorrowing friends of a young boy—a bright and stainless flower, cut off in the bloom of its beauty and virgin purity by the ruthless north winds from the Plutonian shades—in the last sad office of committing the poor clay to the bosom of its mother earth. Inspired by that true sympathy of the great heart of a great man, Colonel Ingersoll stepped to the side of the grave and spoke as follows:

"My friends, I know how vain it is to gild grief with words, and yet I wish to take from every grave its fear. Here in this world, where life and death are equal kings, all should be brave enough to meet what all the dead have met. The future has been filled with fear, stained and polluted by the heartless past. From the wondrous tree of life the buds and blossoms fall with ripened fruit, and in the common bed of earth the patriarchs and babes sleep side by side. Why should we fear that which will come to all that is? We cannot tell; we do not know which is the greater blessing—life or death. We cannot say that death is not a good; we do not know whether the grave is the end of this life or the door of another, or whether the night here is not somewhere else a dawn. Neither can we tell which is the more fortunate, the child dying in its mother's arms, before its lips have learned to form a word, or he who journeys all the length of life's uneven road, taking the last slow steps painfully with staff and crutch. Every cradle asks us 'whence,' and every coffin 'whither?' The poor barbarian, weeping above his dead, can answer these questions as intelligently and satisfactorily as the robed priest of the most authentic creed. The tearful ignorance of the one is just as good as the learned and unmeaning words of the other. No man, standing where the horizon of life has touched a grave, has any right to prophesy a future filled with pain and tears. It may be that death gives all there is of worth to live. If those we press and strain against our hearts could never die, perhaps that love would wither from the earth. May be this common fate treads from out the paths between our hearts the weeds of selfishness and hate, and I had rather live and love where death is king, than have eternal life where love is not. Another life is naught, unless we know and love again the ones who love us here. They who stand with breaking hearts around this little grave need have no fear. The larger and the nobler faith in all that is and is to be, tells us that death, even at its worst, is only perfect rest. We know that through the common wants of life, the needs and duties of each hour, their grief will lessen day by day, until at last these graves will be to them a place of rest and peace, almost of joy. There is for them this consolation, the dead do not suffer. If they live again, their lives will surely be as good as ours. We have no fear; we are all the children of the same mother, and the same fate awaits us all. We, too, have our religion, and it is this: 'Help for the living; hope for the dead.'"

THEMES FOR DEBATE.

Following are many carefully selected topics for debate. The more usual form in their presentation is that of a direct proposition or statement, rather than of a question. The opponents then debate the "affirmative" and "negative" of the proposition. It is well to be very careful, in adopting a subject for a debate, to so state or explain it that misunderstandings may be mutually avoided, and quibbles on the meaning of words prevented.

Which is the better for this nation, high or low import tariffs?

Is assassination ever justifiable?

Was England justifiable in interfering between Egypt and the Soudan rebels?

Is the production of great works of literature favoured by the conditions of modern civilised life?

Was it politic to place restrictions upon the immigration of the Chinese to the United States?

Will coal always constitute the main source of artificial heat?

Has the experiment of universal suffrage proved a success?

Is an income-tax commendable?

Which is the more important to the student, physical science or mathematics?

Is the study of current politics a duty?

Which is the more important as a continent, Africa or South America?

Was Cæsar or Hannibal the more able general?

Is the study of ancient or modern history the more important to the student?

Should aliens be allowed to own real estate in this country?

Do the benefits of the signal service justify its costs?

Should all laws for the collection of debt be abolished?

Is labour entitled to more remuneration than it receives?

Is an untarnished reputation of more importance to a woman than to a man!

Does home life promote the growth of selfishness?

Are mineral veins aqueous or igneous in origin?

Is the theory of evolution tenable?

Was Rome justifiable in annihilating Carthage as a nation?

Which has left the more permanent impress upon mankind, Greece or Rome?

Which is the more important as a branch of education, mineralogy or astronomy?

Is there any improvement in the quality of the literature of to-day over that of last century?

Should the co-education of the sexes be encouraged?

Which should be the more encouraged, novelists or dramatists?

Will the African and Caucasian races ever be amalgamated?

Which is of more benefit to his race, the inventor or the explorer?

Is history or philosophy the better exercise for the mind?

Can any effectual provision be made by the Government against "hard times"?

Which is of the more benefit to society, journalism or the law?

Which was the greater general, Napoleon or Wellington?

Should the volume of money be increased?

Should the railroads be under the direct control of the Government?

Is the pursuit of politics an honourable avocation?

Which is of the greater importance, the college or the university?

Does the study of physical science militate against religious belief?

Is life more desirable now than in ancient Rome?

Should men and women receive the same amount of wages for the same kind of work?

Should there be a censor for the public press?

Should Arctic expeditions be encouraged?

Is it the duty of the Government to encourage art and literature as much as science?

Is suicide cowardice?

Should capital punishment be abolished?

Should the law place a limit upon the hours of daily labour for working men?

Is "socialism" treason?

Should the education of the young be compulsory?

In a hundred years will republics be as numerous as monarchies?

Should book-keeping be taught in the public schools?

Should Latin be taught in the public schools?

Do our methods of government promote centralisation?

Is life worth living?

Should Ireland and Scotland be independent nations?

Should internal revenue taxation be abolished?

Which is of greater benefit at the present day, books or newspapers?

Is honesty always the best policy?

Which has been of greater benefit to mankind, geology or chemistry?

Which could mankind dispense with at least inconvenience, wood or coal?

Which is the greater nation, Germany or France?

Would mankind be the loser if the earth should cease to produce gold and silver?

Is the occasional destruction of large numbers of people, by war and disaster, a benefit to the world?

Which could man best do without, steam or horse power?

Should cremation be substituted for burial?

Should the jury system be continued?

Should the Government establish a national system of telegraph?

Which is more desirable as the chief business of a city—commerce or manufactures?

Which is more desirable as the chief business of a city—transportation by water or by rail?

Should the rate of taxation be graduated to a ratio with the amount of property taxed?

Will a time ever come when the population of the earth will be limited by the earth's capacity of food production?

Is it probable that any language will ever become universal?

Is it probable that any planet, except the earth, is inhabited?

Should the guillotine be substituted for the gallows?

Was Bryant or Longfellow the greater poet?

Can a horse trot faster in harness, or under saddle?

Is dancing, as usually conducted, compatible with a high standard of morality?

Should the grand jury system of making indictments be continued?

Which should be the more highly remunerated, skilled labour or the work of professional men?

Which is the more desirable as an occupation, medicine or law?

Should the formation of trade unions be encouraged?

Which has been the greater curse to man, war or drunkenness?

Which can man the more easily do without, electricity or petroleum?

Should the law interfere against the growth of class distinctions in society?

Which was the greater genius, Mohammed or Buddha?

Which was the more able leader, Pizarro or Cortez?

Which can to-day wield the greater influence, the orator or the writer?

Is genius hereditary?

Is Saxon blood deteriorating?

Which will predominate in five hundred years, the Saxon or Latin races?

Should American railroad companies be allowed to sell their bonds in other countries?

Does civilisation promote the happiness of the world?

Would a rebellion in Russia be justifiable?

Should the theatre be encouraged?

Is agriculture the noblest occupation?

Is legal punishment for crime as severe as it should be?

Has Spanish influence been helpful or harmful to Mexico as a people?

Is life insurance a benefit?

NUMBER OF HORSES AND CATTLE IN THE PRINCIPAL COUNTRIES OF THE WORLD.

Countries.	Cattle.	Horses.	Countries.	Cattle.	Horses.
Austro-Hungary	13,895,455	3,541,810	Spain	2,353,247	...
Great Britain and Ireland	10,639,960	1,936,925	Sweden and Norway	2,382,903	632,233
Belgium	1,382,815	271,974	Switzerland	1,210,849	98,212
Denmark	1,470,078	347,561	India, British	44,074,213	1,635,143
France	13,275,021	2,938,489	Japan	1,093,471	1,564,993
Germany	15,786,764	3,522,545	Australasia	8,228,628	1,373,346
Italy	4,783,232	660,123	United States	49,234,777	13,172,936
Netherlands	1,510,100	270,100	Canada	3,514,989	1,059,358
Portugal	624,658		Newfoundland	19,884	5,436
Russia in Europe	23,628,031	17,880,792			

ENORMOUS WEALTH OF MINES.

The silver mines of Potosi are so notably rich that £9,000,000 have been coined there since 1845. On the opposite side of the chain are the celebrated silver mines of Guantajaya, once famous for the large lumps of silver formerly found there, one of which weighed 800 lbs.

A Peruvian legend narrates the finding of a large lump or nugget of native gold weighing 400 lbs. at the mine of San Juan de Oro, on the headwaters of the Amazon river, during the reign of Charles V.

From time immemorial the mines of Peru have been fabulously rich in silver products. This was the inciting cause of the barbarous enormities and rapacity of the Spaniards at the time of their conquest of the country, in murdering the inhabitants and plundering the tombs of the Inca kings, the royal repositories, and ancient temples. From one temple, that of Cusco, the robbers obtained £2,200,000.

By a parity of what we must regard as retributive justice, much of the vast wealth obtained by these enormities from the helpless natives in Spanish South America and the West Indies, was in turn pillaged from the freebooters by armed vessels under the English flag. These mutual plunderings extended over a long succession of years, and during the reign of various monarchs.

In Peru, the immense silver-bearing deposits of the Cerro de Pasco mines have been worked since 1630. They are situated on the eastern side of the western Cordillera of the Andes, at an elevation of 14,000 feet above tide level, and in consequence have hitherto been difficult of access, but under the new conditions created by the construction of the Trans-Andean Railway (one of the wonders of South America), an output of 20,000 tons of ore per day is spoken of as a possible amount. At present there are 80 stamps at work, each with an estimated capacity of crushing 5 tons of ore per day, but 200 or 300 head are looked forward to as a small number at an early day. The ore will average about £6 per ton, and the anticipated annual production of the mines is £20,000,000. From £50,000,000 to £100,000,000 of free milling ores will be left above drainage level by the new tunnel lately constructed; these ores it is proposed to excavate by means of steam shovels, and load directly into railway trucks, which deliver them at the top of the mill. The water-power is supplied from a stream issuing from a lake near the mines, and is utilised by six double turbine water-wheels. Four of these turbines are of 30 in. diameter, each developing 200 horse-power, and two of 23 in. diameter, developing 100 horse-power each. The mineral railway, undoubtedly the highest in the world, is 7 miles long, and cost £250,000, the object of the road being to transport ores from the mines to water-power for milling purposes. The rolling stock, bridges, rails, etc., of the road, were transported from the coast, nearly 200 miles distant, on the backs of mules, over almost impassable roads. Nothing weighing over 300 lbs. could be carried; even the cylinders of the locomotives were brought in sections.

The silver mine of Potosi is sugar-loaf in form, 9 miles round, 16,000 feet above the level of the sea, and 2,700 above the plain. The upper part has 5,000 adits for mines. South America, per Humboldt, yield per annum £9,000,000 worth of silver; at the present time the yield is much greater. One mine is a third of a mile deep, and 8 miles in length, employing 3,000 miners. In Peru over 40 districts are famous for their vast mineral wealth in gold and silver.

In Russia, the immense mines of Siberia are government property, and are worked by miserable unfortunates who have been banished by a cruel despotism for crimes which are in many cases merely imaginary; the wretched exiles, when once consigned to their gloomy depths, are never permitted to emerge into the light of day, but death, more merciful than the tyrant, soon ends the strife, for few survive the ordeal more than nine years.

The "wealth of the Indies" is no poet's dream; there the mines are indigenous, and the accumulation of the precious metals has been such that it is usually estimated that Nadir Shah, in 1740, carried away not less than £300,000,000 or £400,000,000. In Jahomqueir's autobiography, he relates that a golden platform around his throne weighed 40 tons. His throne and crown were worth £4,000,000. On his marriage he presented his queen with as many lacs of rupees as amounted to £10,000,000, and with a necklace of 40 beads which cost him £2,000 per bead. He spent besides £2,000,000 on the tomb of his father Akbar, one of the wonders of India. The province of Berar, on one occasion, furnished above £4,000,000 in gold.

The ceiling of the pavilion of the Peacock Hall in Delhi, was originally covered with silver filigree work, but in 1799 the Mahrattas, after the capture of the city, took the silver down and melted it, the value of the same being estimated at £200,000. Here was the famous peacock throne, so-called from its having the figures of two peacocks standing behind it, their tails being expanded, and the whole so inlaid with sapphires, rubies, emeralds, and other precious stones of appropriate colours, as to represent life. The throne itself is 6 feet long by 4 feet broad; it stood on six massive feet, which, with the body, were of solid gold, inlaid with rubies, emeralds, and diamonds. It was surrounded with a canopy of gold supported by twelve pillars, emblazoned with costly gems, and a fringe of pearls around the borders of the canopy. Between the peacocks stood the figure of a parrot, life size, carved from a single emerald. On either side of the throne stood a chatta, or umbrella (one of the oriental emblems of royalty) made of crimson velvet, embroidered and fringed with pearls. The handles were 8 feet long, of solid gold, and studded with diamonds. The cost of this superb work of art was estimated at £5,000,000.

The Melbourne *Herald* thus described the "Welcome nugget," weighing 184 lbs. Troy, and worth £9,000, found at Ballarat, Australia, on the 9th June, 1858, at a depth of 190 feet below the surface of the earth:—"A large, misshapen, irregular lump of gold, water-worn and rounded upon each of the numerous edges presented by the surface completely and more or less honey-combed. Its total length is about 20 inches, its greatest breadth about 12 inches, and its greatest depth about 8 inches." Other nuggets varying in weight from 10 to 45 ozs. had previously been taken from the same claim.

Another nugget weighing 145 lbs. was found at Korong, Australia, during the summer of 1857, in the form of a solid mass of virgin gold, 2 feet 4 inches long, 10 inches broad, and from 1 to 2 inches thick, estimated value £7,000.

Victoria, in Australia, is world renowned from the discovery of its immense goldfields in 1851, which in 1852 produced the enormous amount of £14,000,000.

A nugget weighing 161 lbs. avoirdpois (including about 20 lbs. of quartz), of an estimated value of £6,000, was found in Calaveras Co., California, in November 1854.

Perhaps not less than from 1,800 to 2,000 nuggets, weighing 1 lb. or more each, have been found from time to time in California. Of these probably less than 140 weigh over 20 lbs. each. Nuggets weighing from 1 to 7 ozs. have been found in immense numbers.

Colorado presents a confluence of wonders in the form of mineral deposits, which it would require a volume to describe.

TENSILE STRENGTH OF MATERIALS, SHOWING THE STRENGTH OR FORCE REQUIRED TO TEAR ASUNDER ONE SQUARE INCH :—

	Lbs.
Iron Wire, wrought	103,000
Swedish bar Iron	72,000
Russian ,, ,,	59,500
Mean of English Iron	53,900
Gun Metal, mean of Iron	37,232
Clyde, No. 1, Iron	16,125
,, ,, 2, ,,	23,468
Stirling, mean of Iron	25,767
American, mean of Iron	45,970
Low-moor, No. 2, cast Iron	14,076
Crank Shaft, Iron	44,750
American boiler plates, Iron	48,000 62,000
English plates, mean	51,000
,, ,, lengthwise	53,800
English plates, crosswise	48,800
German piano steel Wire	268,800
Cast Steel, maximum	142,000
Cast Steel, mean	88,000
Steel	100,000 to 130,000
Chromo Steel, mean	170,980
Shear Steel	124,000
American Tool Co.	179,980
Blistered Steel, soft	133,000 104,000
Razor Steel	15,000
Steel plates, lengthwise	96,300
Steel plates, crosswise	93,700

	Lbs.
Yellow metal	48,700
Cast Copper	19,000
American Copper	24,250
Brass Wire	50,000
Copper Bolts	38,000
,, Wire	60,000
Brass	42,000
Gold	20,490
,, 5 pts., copper, 1 pt.	50,000
Silver, cast	40,997
Bronze	17,698 to 56,788
Tin, cast, block	5,000
,, Banca	2,122
Platinum Wire	5,300
Zinc	7,000
Sheet Lead	3,000
Antimony	1,060
Bismuth, cast	3,120
Ivory	16,070
Manilla Rope	9,300
Tarred Hemp Rope	15,000
Wire Rope	37,000
Whalebone	7,600
Leather Belting	333
Gutta-percha	3,500
Slate	12,000
Well-burned Brick	750
Inferior Brick	100 to 200
Portland Stone	857 to 1,000
Crown Glass	42,346
Limestone	370 to 2,800
Hydraulic Lime	140
,, Cement	234
Portland Cement, 6 mos.	414
Plaster of Paris	72

Remarks.—Owing to the damage inflicted by the hot tar, tarred ropes are 25 per cent. weaker than white ropes. Hemp rope is stronger than Manilla, but tarred hemp and manilla are nearly of equal strength. Manilla ropes are from 25 to 30 per cent. weaker than white ropes. Twisted hempen cords will sustain the following weights per square inch of their section :—$\frac{1}{4}$ in. to 1 in. thick, 8,746 lbs. ; 1 to 3 ins. thick, 6,860 lbs. ; 3 to 5 ins. thick, 5,345 lbs. ; 5 to 7 ins. thick, 4,860 lbs. Ropes of 4 strands up to 8 ins. are about 17 per cent. stronger than those having but 3 strands. One-eighth of an inch in diameter of iron will sustain more than 1 in. in circumference of hemp rope. In Tredgold's and Duleau's experiments, a piece of the best bar iron, 1 in. square, bore a weight of 77,373 lbs., while a similar piece of cast iron would be torn asunder by a weight of from 16,242 to 19,464 lbs., and 1 square inch of iron wire would sustain a mean weight of 126,340 lbs. In sixteen experiments by Mr. Fairbairn and Mr. Hodgkinson, on cast iron, the average strain that 1 square inch sustained was 7$\frac{1}{2}$ tons, the weakest bearing 6 tons, and the strongest 9$\frac{3}{4}$ tons. Telford's and Brown's experiments show that malleable iron will bear, on an average, 27 tons, the weakest being 24 and the strongest 29 tons.

Mercury freezes at 40° below zero, and melts at 39°. Ether freezes at 47° below zero; wine freezes at 20°; sea water freezes at 28·3°. Alcohol has been exposed to 110° and 120° below zero without freezing. Granite decomposes at a red heat. The second's pendulum, of 39·139 ins., is lengthened by 30° of temperature 128th of an inch, or 8 vibrations in 24 hours.

The heat conducting powers of metals, etc., are as follows :—Gold, 1000 ; platinum, 981 ; silver, 973 ; copper, 898·2 ; iron, 374·3 ; zinc, 363 ; tin, 303·9 ; lead, 179·6 ; marble, 23·6 ; porcelain, 12·2 ; fine clay, 11·4.

1 lb. of coke melts 94 lbs. of ice ; 1 lb. of coal, 90 lbs.; 1 lb. of wood, 52 lbs. ; 1 lb. of charcoal, 95 lbs. ; 1 lb. of peat, 19 lbs. The capacity of the solar heat all over the globe is the ability to melt an icy covering 46 feet in thickness.

6 lbs. white lead added to 1 gal. tar varnish, and applied as paint, will prevent damp coming through walls.

UNIVERSAL STAIN REMOVING TABLE.

Showing at a glance what means to employ in removing any kind of stain from any kind of fabric. Red acid stains are destroyed by ammonia, followed by thorough washing with water. Burn stains of nitric acid are permanent. Great care must be observed when ether and benzine are used. Keep the open bottle and the fabric being cleaned away from an open fire or blaze. The ether especially is so volatile that an open bottle will take fire from a gas-jet or blaze several feet away if the draft is right. You cannot be too careful.

Kind of Stain.	From Linen.	Coloured Fabrics.		Silk.
		Cotton.	Wool.	
Sugar, gelatine, blood, albumen.	Washing simply in water.			
Fat.	Soap-water, alkaline lyes.	Tepid soap-water.	Soap-water, spirit sal-ammoniac.	Benzine, ether, spirit of sal-ammoniac, potash magnesia, chalk, yolk of egg.
Varnish and oil paint.	Oil of turpentine, benzine, and finally soap.			Benzine, ether, soap; careful rubbing.
Stearine.	Alcohol of 95 per cent.			
Vegetable colours, red wine, fruits, red ink.	Sulphurous vapours, warm chlorine water.	Washing in warm soap-water or liquid ammonia.		As above, rubbing gently and carefully.
Alizarine ink.	Tartaric acid; the older the stain the more concentrated the solution.	Diluted solution of tartaric acid, if the fabric permits.		As above.
Rust and gall-nut ink.	Warm oxalic acid solution, diluted hydrochloric acid, and finally tin filings.	Repeated washing with dissolved citric acid, if the fabric is dyed well.	The same as for cotton, but diluted hydrochloric acid if the wool is naturally coloured.	Nothing can be done; all attempts only increase the evil.
Lime and alkaline lyes.	Washing simply in water.	Pouring diluted nitric acid drop by drop upon the stain. The stain previously moistened is rubbed off with the finger.		
Tannin, green nut shells.	Eau de Javelle, warm chlorine water, concentrated solution of tartaric acid.	More or less concentrated chlorine water, according to the nature and tint of the fabric, and alternate washing with water.		
Coal-tar, waggon-grease.	Soap, oil of turpentine, alternating with a jet of water.	Rubbing with lard, then soaping, and after a while washing alternately with oil of turpentine and water.		Same as for coloured fabrics; use benzine instead of turpentine; jet of water must fall on back of stain.

DYERS, BLEACHERS, AND CLOTHIERS' RECEIPTS.

In accommodation to the requirements of dyers, many of the following receipts describe dyes for large quantities of goods, but to make them equally adapted for the use of private families they are usually given in even quantities, so that it is quite an easy matter to ascertain the quantity of materials required for dyeing, when once the weight of the goods is known; the quantity of materials used being reduced in proportion to the smaller quantity of goods.

Use soft water for all dyeing purposes, if it can be procured, using 4 gals. water to 1 lb. of goods; for larger quantities, a little less water will do. Let all the implements used in dyeing be kept perfectly clean. Prepare the goods by scouring well with soap and water, washing the soap well out and dipping in warm water, previous to immersion in the dye or mordant. Goods should be well aired, rinsed, and properly hung up after dyeing. Silks, and fine goods should be tenderly handled, otherwise injury to the fabric will result.

SAXON BLUE.—For 100 lbs. thibet or comb yarn, use alum 20 lbs., cream of tartar 3 lbs., mordant 2 lbs.; extract of indigo 3 lbs., or carmine 1 lb., makes a better colour. When all is dissolved cool the kettle to 180° Fahr.; enter and handle quickly at first, then let it boil ½ hour, or until even. Long boiling dims the colour. Zephyr worsted yarn ought to be prepared, first by boiling it in a solution of alum and sulphuric acid, then the indigo is added afterwards.

Green Fustic Dye.—For 50 lbs. of goods use 50 lbs. of fustic with alum 11 lbs. Soak in water until the strength is extracted, put in the goods until of a good yellow colour, remove the chips, and add extract of indigo in small quantities at a time, until the colour is satisfactory.

Purple Blue on Wool.—100 lbs. of wool are first dipped in the blue vat to a light shade, then boiled in a solution of 15 lbs. of alum, and 3 lbs. of half refined tartar, for 1½ hours, the wool taken out, cooled, and let stand 24 hours. Then boil in fresh water 8 lbs. of powdered cochineal for a few minutes, cool the kettle to 170° Fahr.; handle the prepared wool in this for 1 hour, when it is ready to cool, rinse, and dry. By colouring first with cochineal, as aforesaid, and finishing in the blue vat, the fast purple or dahlia, so much admired in German broadcloths, will be produced. Tin acids must not be used in this colour.

Blue Dye for Hosiery.—100 lbs. of wool are coloured with 4 lbs. Guatemala or 3 lbs. Bengal indigo, in the soda or wood vat; then boil in a kettle a few minutes, 5 lbs. of cudbear or 8 lbs. of orchil paste; add 1 lb. of soda, or better, 1 pail of urine, then cool the dye to about 170° Fahr.; and enter the wool. Handle well for about 20 minutes, then take it out, cool, rinse, and dry. It is all the same if the cudbear is put in before or after the indigo. 3 ozs. of aniline purple dissolved in alcohol, ½ pt., can be used instead of the cudbear. (Wood spirit is cheaper than alcohol, and is much used now by dyers for the purpose of dissolving aniline colours.) It produces a very pretty shade, but should never be used on mixed goods which have to be bleached.

Logwood and Indigo Blue Dye for Cloth.—100 lbs. of cloth; colour the cloth first by one or two dips in the vat of indigo blue, and rinse it well, then boil it in a solution of 20 lbs. of alum, 2 lbs. of half refined tartar, and 5 lbs. of mordant, for 2 hours, then take it out and cool. In fresh water boil 10 lbs. of good logwood for half an hour in a bag or otherwise; cool off to 170° Fahr. before entering; handle well over a reel, let it boil for half an hour, then take it out, cool, and rinse. This is a very firm blue.

Dye for Wool or Silk.—*Colour between Purple and Blue.*—For 40 lbs. of goods, take bichromate of potash 8 ozs., alum 1 lb., dissolve all and bring the water to a boil, and put in the goods; boil 1 hour; then empty the dye, and make a new dye with logwood 8 lbs., or extract of logwood 1 lb. 4 ozs., and boil in this 1 hour longer. Grade the colour by using more or less logwood, as you wish it dark or light in the colour.

New Bleach for Wool, Silk, or Straw.—Mix together 4 lbs. oxalic acid, 4 lbs. table salt, water 50 gals. The goods are laid in this mixture for 1 hour, they are then generally well bleached, and only require to be thoroughly rinsed and worked. For bleaching straw it is best to soak the goods in caustic soda, and afterwards to make use of chloride of lime or Javelle water. The excess of chlorine is afterwards removed by hyposulphite of soda.

To fix Dyes.—*New Process.*—Mr. Kipping, of Manchester, England, has a new process of fixing dyes. He dissolves 20 ozs. of gelatine in water, and adds 3 ozs. of bichromate of potash. This is done in a dark room. The colouring matter is then added and the goods submitted thereto; after which they are exposed to the action of light; the pigment thus becomes insoluble in water and the colour is fast.

Scarlet with Lac Dye.—For 100 lbs. of flannel or yarn, take 25 lbs. of ground lac dye, 15 lbs. of scarlet spirit (made as per directions below), 5 lbs. of tartar, 1 lb. of flavine, or according to shade, 1 lb. of tin crystals, 5 lbs. of muriatic acid. Boil all for 15 minutes, then cool the dye to 170° Fahr.; enter the goods, and handle them quickly at first. Let them boil 1 hour, rinse them while yet hot, before the gum and impurities harden. This colour stands scouring with soap better than cochineal scarlet. To this dye, a small quantity of sulphuric acid may be used, as it dissolves the gum.

Muriate of Tin or Scarlet Spirit.—Take 16 lbs. muriatic acid, 22° B., 1 lb. feathered tin, water 2 lbs. The acid should be put in a stoneware pot, and the tin added, and allowed to dissolve; the mixture should be kept a few days before using. The tin is feathered or granulated by melting in a suitable vessel, and pouring it from a height of about 5 feet into a pailful of water. This is a most powerful agent in certain colours, such as scarlets, oranges, pinks, etc.

Scarlet Dye with Cochineal.—For 50 lbs. of wool, yarn, or cloth, use cream of tartar 1 lb. 9 ozs., cochineal pulverised 12½ ozs., muriate of tin or scarlet spirit 8 lbs.; after boiling the dye, enter the goods, work them well for 15 minutes, then boil them 1½ hours slowly agitating the goods while boiling, wash in clean water, and dry out of the sun.

Purple Dye.—For 40 lbs. of goods, use alum 3 lbs., muriate of tin 4 teacups, pulverised cochineal 1 lb., cream of tartar 2 lbs. Boil the alum, tin, and cream of tartar for 20 minutes, add the cochineal and boil 5 minutes, immerse the goods 2 hours, remove and enter them in a new dye composed of Brazil wood 3 lbs., logwood 7 lbs., alum 4 lbs., muriate of tin 8 cupfuls, adding a little extract of indigo, made as follows:

Chemic Bluing or Extract of Indigo.——Take oil of vitriol 2 lbs., and stir into it finely pulverised indigo 8 ozs., stirring briskly for the first ½ hour, then cover it up, and stir 4 or 5 times daily for a few days, then add a little pulverised chalk, stirring it up, and keep adding it as long as it foams: it will neutralise the acid. Keep it closely corked.

Light Silver Drab.—For 50 lbs. of goods use logwood ½ lb., alum, about the same quantity; boil well, enter the goods, and dip them for 1 hour. Grade the colour to any desired shade, by using equal parts of logwood and alum.

Chrome Black for Wool.—For 40 lbs. of goods, use blue vitriol 3 lbs., boil it a short time, then dip the wool or fabric ¾ hour, airing frequently; take out the goods, and make a dye with logwood 24 lbs.; boil ½ hour, dip $\frac{3}{4}$ hour, air the goods, and dip $\frac{1}{4}$ hour longer, wash in strong soapsuds. A good fast colour.

Black Dye on Wool, for Mixtures.—For 50 lbs. of wool take bichromate of potash 1 lb. 4 ozs., ground argal 15 ozs.; boil together and put in the fabric, stirring well, and let it remain in the dye 5 hours; take it out, rinse slightly in clean water, then make a new dye, into which put logwood $17\frac{1}{2}$ lbs. Boil $1\frac{1}{4}$ hour, adding chamber lye 5 pts. Let the fabric remain in all night, and wash out in clean water

Red Madder.—This colour is mostly used for army uniforms, etc. To 100 lbs. of fabric use 20 lbs. of alum, 5 lbs. of tartar, and 5 lbs. of muriate of tin. When these are dissolved, enter the goods, and let them boil for 2 hours, then take them out, let cool, and lay over night. Into fresh water, stir 75 lbs. of good madder, and enter the fabric at 120° Fahr. and bring it up to 200° in the course of an hour, handle well to secure evenness, then rinse and dry.

Dark Snuff Brown on Wool.—For 50 lbs. of goods, take camwood 10 lbs., boil for 20 minutes, then dip the goods for $\frac{3}{4}$ hour, then take them out, and add to the dye, fustic 25 lbs.; boil 12 minutes and dip the goods $\frac{3}{4}$ hour, then add blue vitriol 10 ozs., copperas 2 lbs. 8 ozs., dip again 40 minutes; add more copperas if the shade is required darker.

Wine Colour Dye.—For 50 lbs. of goods use camwood 10 lbs., boil 20 minutes, dip the goods $\frac{1}{2}$ hour, boil again and dip 40 minutes, then darken with blue vitriol 15 ozs., and should you wish it darker, add 5 lbs. of copperas.

Pink Dye for Wool.—For 60 lbs. of goods, take alum 5 lbs. 12 ozs., boil and immerse the goods 50 minutes, then add to the dye cochineal well pulverised, 1 lb. 4 ozs., cream of tartar, 5 lbs.; boil and enter the goods while boiling, until the colour is satisfactory.

Dark Blue Dye.—*Suitable for Thibets and Lastings.*—Boil 100 lbs. of the fabric for $1\frac{1}{2}$ hour in a solution of alum 25 lbs., tartar 4 lbs., mordant 6 lbs., extract of indigo 6 lbs.; cool them as usual. Boil in fresh water from 8 to 10 lbs. of logwood, in a bag or otherwise, then cool the dye to 170° Fahr.; reel the fabric quickly at first, then let it boil strongly for 1 hour. This is a very good imitation of indigo blue.

Orange Dye.—For 50 lbs. of goods, use argal 3 lbs., muriate of tin 1 qt., boil and dip 1 hour; then add to the dye, fustic 25 lbs., madder $2\frac{1}{2}$ qts., and dip again 40 minutes. If preferred, cochineal 1 lb. 4 ozs. may be used instead of the madder, as a better colour is induced by it.

Sky Blue on Cotton.—60 lbs. of goods, blue vitriol 5 lbs. Boil a short time, then enter the goods, dip 3 hours, and transfer to a bath of strong lime water. A fine *brown* colour will be imparted to the goods if they are then put through a solution of prussiate of potash.

A Brown Dye on Wool may be induced by a decoction of oak bark, with variety of shade according to the quantity employed. If the goods be first passed through a mordant of alum the colour will be brightened.

Brown on Cotton.—Catechu or terra japonica gives cotton a brown colour, blue vitriol turns it on the *bronze*, green copperas *darkens* it, when applied as a mordant and the stuff boiled in the bath boiling hot. Acetate of alumina as a mordant, brightens it. The French colour named "*Carmelite*" is given with catechu 1 lb., verdigris 4 ozs., and sal-ammoniac 5 ozs.

Brown on Wool and Silk.—Infusion or decoction of walnut-peels dyes wool and silk brown colour, which is brightened by alum. Horse-chestnut peels also impart a brown colour; a mordant of muriate of tin turns it on the *bronze*, and sugar of lead the *reddish brown*.

Solitaire.—Sulphate or muriate of manganese dissolved in water with a little tartaric acid imparts this beautiful bronze tint. The stuff after being put through the solution must be turned through a weak lye of potash, and afterwards through another of chloride of lime, to brighten and fix it. *Prussiate of copper* gives a *bronze* or *yellowish brown* colour to silk. The piece well mordanted with blue vitriol, may be passed through a solution of *prussiate of potash.*

Fuller's Purifier for Cloths.—Dry, pulverise, and sift the following ingredients:—Fuller's earth 6 lbs., French chalk 4 ozs., pipe clay 1 lb.; make into a paste with rectified oil of turpentine 1 oz., alcohol 2 ozs., melted oil soap $1\frac{1}{2}$ lb. Compound the mixture into cakes of any desired size, for sale if required, keeping them in water, or small wooden boxes.

Green on Cotton.—For 40 lbs. of goods, use fustic 10 lbs., blue vitriol 10 ozs., soft soap $2\frac{1}{2}$ qts., and logwood chips 1 lb. 4 ozs. Soak the logwood over night in a brass vessel, put it on the fire in the morning, adding the other ingredients. When quite hot it is ready for dyeing; enter the goods at once, and handle well. Different shades may be obtained by letting part of the goods remain longer in the dye.

Pink Dye for Cotton.—For 40 lbs. of goods, use redwood 20 lbs., muriate of tin $2\frac{1}{2}$ lbs.; boil the redwood 1 hour, turn off into a large vessel, add the muriate of tin, and put in the goods, let it stand a few minutes (5 or 10), and a nice pink will be produced. It is quite a fast colour.

Purple Dye for Silk.—For 10 lbs. of goods, enter your goods in blue dye bath, and secure a light blue colour, dry, and dip in a warm solution containing alum $2\frac{1}{2}$ lbs. Should a deeper colour be required, add a little extract of indigo.

Yellow on Silk.—For 10 lbs. goods, use sugar of lead $7\frac{1}{2}$ ozs., alum 2 lbs., enter the goods and let them remain 12 hours, remove them, drain, and make a new dye with fustic 10 lbs. Immerse until the colour suits.

Purple on Cotton.—Get up a tub of hot logwood liquor, enter 3 pieces, give them 5 ends, hedge out; enter them into a clean alum tub, give them 5 ends, hedge out; get up another tub of logwood liquor, enter, give them 5 ends, hedge out; renew your alum tub, give them 5 ends in that, and finish.

Black on Cotton.—For 40 lbs. goods, use sumac 30 lbs., boil $\frac{3}{4}$ hour, let the goods steep over night, and immerse them in lime water 40 minutes, remove, and allow them to drip $\frac{3}{4}$ hour, now add copperas 4 lbs. to the sumac liquor, and dip 1 hour more; next work them through lime water for 20 minutes, next make a new dye of logwood 20 lbs., boil $2\frac{1}{2}$ hours, and enter the goods 3 hours, then add bichromate of potash 1 lb. to the new dye, and dip 1 hour more. Work in clean cold water and dry out of the sun.

Red Dye for Wool.—For 40 lbs. of goods, make a tolerably thick paste of lac dye and sulphuric acid, and allow it to stand for a day. Now take tartar 4 lbs., tin liquor 2 lbs. 8 ozs., and 3 lbs. of the above paste, make a hot bath with sufficient water, and enter the goods for ¾ hour, afterwards carefully rinse and dry.

Yellow on Cotton.—For 40 lbs. goods, use sugar of lead 3 lbs. 8 ozs., dip the goods 2 hours. Make a new dye with bichromate of potash 2 lbs., dip until the colour suits, wring out and dry: if not yellow enough repeat the operation.

Violet Dye on Silk or Wool.—A good violet dye may be given by passing the goods first through a solution of verdigris, then through a decoction of logwood, and lastly alum water. A *fast violet* may be given by dyeing the goods crimson with cochineal, without alum or tartar, and after rinsing, passing them through the indigo vat. *Linens or Cottons* are first galled with 18 per cent. of gall nuts, next passed through a mordant of alum, iron liquor, and sulphate of copper, working them well, then worked in a madder bath made with an equal weight of root, and lastly brightened with soap or soda.

Slate Dye on Silk.—For a small quantity, take a pan of warm water, and about a teacupful of logwood liquor, pretty strong, and a piece of pearlash the size of a nut; take grey-coloured goods and handle a little in this liquid, and it is finished. If too much logwood is used, the colour will be too dark. A *Straw colour* on silk: Use smartweed, boil in a brass vessel, and set with alum.

Lilac Dye on Silk.—For 5 lbs. of silk, use archil 7½ lbs., mix it well with the liquor; make it boil ¼ hour, dip the silk quickly, then let it cool, and wash it in river water, and a fine half violet, or lilac, more or less full, will be obtained.

Green Dye on Silk.—Take green ebony, boil it in water, and let it settle; take the clear liquor as hot as you can bear your hands in it, and handle your goods in it until of a bright yellow; then take water and put in a little sulphate of indigo; handle your goods in this till of the shade desired. The ebony may previously be boiled in a bag to prevent it sticking to the silk.

Brown on Silk.—Dissolve annatto 1 lb., pearlash 4 lbs., in boiling water, and pass the silk through it for 2 hours, then take it out, squeeze it well and dry; next give it a mordant of alum, and pass it first through a bath of Brazil-wood, and afterwards through a bath of logwood to which a little green copperas has been added, wring it out and dry, afterwards rinse well.

Brown Dye on Cotton or Linen.—Give the pieces a mixed mordant of acetate of alumina and acetate of iron, and then dye them in a bath of madder, or madder and fustic, when the acetate of alumina predominates the dye has an *amaranth* tint. A *cinnamon* tint is obtained by first giving a mordant of alum, then a madder bath, then a bath of fustic, to which a little green copperas has been added.

Mulberry on Silk.—For 5 lbs. of silk, use alum 1 lb. 4 ozs., dip 50 minutes, wash out, and make a dye with Brazil-wood 5 ozs., and logwood 1¼ oz. by boiling together; dip in this ½ hour, then add more Brazil-wood and logwood, equal parts, until the colour suits.

Green Dye on Wool and Silk.—Equal quantities of yellow oak and hickory bark, make a strong yellow bath by boiling, shade to the desired tint by adding a small quantity of extract of indigo.

Orange Dye.—For 40 lbs. of goods, use sugar of lead 2 lbs., boil 15 minutes, when a little cool, enter the goods, and dip for 2 hours; wring them out, make a fresh dye with bichromate of potash 4 lbs., madder 1 lb.; immerse until of the desired colour. The shade may be varied by dipping in lime water.

Blue on Cotton.—For 40 lbs. of goods, use copperas 2 lbs.; boil and dip 20 minutes, then dip in soapsuds, and return to the dye 3 or 4 times; then make a new bath with prussiate of potash ½ lb., oil of vitriol 1¼ pt.; boil ½ hour, rinse out and dry.

Solferino and Magenta Dyes on White Woollen, Silk, or Cotton and Woollen Mixtures.—For 1 lb. of woollen goods, *Magenta shade*, 96 grs. apothecaries' weight, of aniline red, will be required; dissolve in a little warm alcohol; using say 6 fluid ozs. of alcohol, or about 6 gills alcohol per oz. of aniline. Many dyers use wood spirit because of its cheapness. For a *Solferino shade*, use 64 grs. aniline red, dissolved in 4 ozs. alcohol, to each 1 lb. of goods. Cold water 1 qt. will dissolve these small quantities of aniline red, but the cleanest and quickest way will be found by using the alcohol or wood spirit. Clean the cloth and goods by steeping at a gentle heat in weak soapsuds, rinse in several messes of clean water and lay aside moist. The alcoholic solution of aniline is to be added from time to time to the warm or hot dye bath, till the colour on the goods is of the desired shade. The goods are to be removed from the dye bath before each addition of the alcoholic solution, and the bath is to be well stirred before the goods are returned. The alcoholic solution should be first dropped into a little water, and well mixed, and the mixture should then be strained into the dye bath. If the colour is not dark enough after working from 20 to 30 minutes, repeat the removal of the goods from the bath, and the addition of the solution, and the re-immersion of the goods from 15 to 30 minutes more, or until suited, then remove from the bath, and rinse in several messes of clean water, and dry in the shade. Use about 4 gals. water for dye bath for 1 lb. of goods; less water for larger quantities.

Liquid Dye Colours.—1. *Blue.*—Dilute Saxon blue or sulphate of indigo with water. If required for delicate work, neutralise with chalk. 2. *Purple.*—Add a little alum to a strained decoction of logwood. 3. *Green.*—Dissolve sap green in water and add a little alum. 4. *Yellow.*—Dissolve annatto in a weak lye of subcarbonate of soda or potash. 5. *Golden colour.*—Steep French berries in hot water, strain, and add a little gum and alum. 6. *Red.*—Dissolve carmine in ammonia, or in weak carbonate of potash water, or infuse powdered cochineal in water, strain, and add a little gum in water. The preceding colours, thickened with a little gum, may be used as inks in writing, or as colours to tint maps, foils, artificial flowers, etc., or to paint on velvet.

To Cleanse Wool.—Make a hot bath composed of water 4 parts, urine 1 part, enter the wool, teasing and opening it out to admit the full action of the liquid; after 20 minutes' immersion, remove from the liquid and allow it to drain, then rinse it in clean running water, and spread out to dry. The liquid is good for subsequent operations, only keep up the proportions, and use no soap.

Starch Lustre.—A portion of stearine, the size of an old fashioned halfpenny, added to starch $\frac{1}{2}$ lb., and boiled with it for 2 or 3 minutes will add greatly to the beauty of linen, to which it may be applied. See also *Starch Polish* under the Grocers' Department.

To Dye Hats.—The hats should be at first strongly galled by boiling them a long time in a decoction of galls with a little logwood, that the dye may penetrate the better into their substance; after which a proper quantity of vitriol and decoction of logwood, with a little verdigris, are added, and the hats continued in this mixture for a considerable time. They are afterwards put into a fresh liquor of logwood, galls, vitriol, and verdigris, and, when the hats are of great price, or of a hair which with difficulty takes the dye, the same process is repeated a third time. For obtaining the most perfect colour the hair or wool is dyed blue previously to its being formed into hats.

Chestnut Brown on Straw Bonnets.—For 25 hats, use ground sanders $1\frac{1}{2}$ lb., ground curcuma 2 lbs., powdered gall nuts or sumac $\frac{3}{4}$ lb., rasped logwood $\frac{1}{10}$ lb. Boil all together with the hats in a large kettle (so as not to crowd), for 2 hours, then withdraw the hats, rinse, and let them remain over night in a bath of nitrate of 40° Baume, when they are washed. A darker brown may be obtained by increasing the quantity of sanders. To give the hats the desired lustre, they are brushed with a brush of dog's (couch) grass, when dry.

Violet Dye on Straw Bonnets.—Take alum 4 lbs., tartaric acid 1 lb., chloride of tin 1 lb. Dissolve and boil, allow the hats to remain in the boiling solution 2 hours, then add as much of a decoction of logwood and carmine of indigo as is requisite to induce the desired shade, and lastly, rinse finally in water in which some alum has been dissolved.

Silver Grey Dye on Straw.—For 25 hats, select your *whitest* hats and soften them in a bath of crystallised soda to which some clean lime water has been added. See "*Lime water*" below. Boil for two hours in a large vessel, using for a bath a decoction of the following, viz.: alum 4 lbs., tartaric acid $\frac{3}{8}$ lb., some ammoniacal cochineal, and carmine of indigo; a little sulphuric acid may be necessary in order to neutralise the alkali of the cochineal dye. If the last-mentioned ingredients are used, let the hats remain for an hour longer in the boiling bath, then rinse in slightly acidulated water.

Lime Water for Dyers' Use.—Put stone lime 1 lb., and strong lime water $1\frac{1}{2}$ lb. into a pail of water; rummage well for 7 or 8 minutes, then let it rest until the lime is precipitated and the water clear; add this quantity to a tubful of clear water.

Dark Steel Colour.—Mix black and white wool together in the proportion 50 lbs. of black wool to $7\frac{1}{2}$ lbs. of white. For large or small quantities keep the same proportion, mixing carefully and thoroughly.

To Render Aniline Colours Soluble in Water.—A solution of gelatine in acetic acid of almost the consistence of syrups is first made, and the aniline in fine powder is gradually added, stirring all the time so as to make a homogeneous paste. The mixture is then to be heated over a water bath to the temperature of boiling water and kept at that heat for some time.

Aniline Green on Silk.—Iodine green or night green dissolves easily in warm water. For a liquid dye, 1 lb. may be dissolved in 1 gal. alcohol, and mixed with 2 gals. water, containing 1 oz. sulphuric acid.

To Dye Aniline Scarlet.—For every 40 lbs. of goods, dissolve 5 lbs. white vitriol (sulphate of zinc) at 180° Fahr., place the goods into this bath for 10 minutes, then add the colour, prepared by boiling for a few minutes, 1 lb. aniline scarlet in 3 gals. water, stirring the same continually. This solution has to be filtered before being added to the bath. The goods remain in the latter for 15 minutes, when they have become browned and must be boiled for another half hour in the same bath after the addition of sal-ammoniac. The more of this is added the deeper will be the shade.

Bismarck Brown for Dyeing.—Mix together 1 lb. Bismarck, 5 gals. water, and $\frac{3}{4}$ lb. sulphuric acid. This paste dissolves easily in hot water and may be used directly for dyeing. A liquid dye may be prepared by making the bulk of the above mixture, to 2 gals. with alcohol. To dye with the above mixture, sour with sulphuric acid; add a quantity of sulphate of soda, immerse the wool, and add the colour by small portions, keeping the temperature under 212° Fahr. Very interesting shades may be developed by combining the colour with indigo paste or picric acid.

To Dye Wool with Aniline Green.—For wool, prepare two baths, one containing the dissolved dye and a quantity of carbonate of soda or borax. In this the wool is placed, and the temperature is raised to 212° Fahr. A greyish green is produced, which must be brightened and fixed in a second bath of water 100° Fahr., to which some acetic acid has been added. Cotton requires preparation by sumac.

Aniline Blue.—To 100 lbs. of fabric dissolve $1\frac{1}{4}$ lb. aniline blue in 3 qts. hot alcohol; strain through a filter and add it to a bath of 130° Fahr.; also 10 lbs. glauber salts, and 5 lbs. acetic acid. Enter the goods and handle them well for 20 minutes; next heat it slowly to 200° Fahr.; then add 5 lbs. sulphuric acid diluted with water. Let the whole boil 20 minutes longer; then rinse and dry. If the aniline be added in two or three proportions during the process of colouring, it will facilitate the evenness of the colour.

Aniline Red.—Enclose the aniline in a small muslin bag; have a kettle (tin or brass) filled with moderately hot water and rub the substance out. Then immerse the goods to be coloured, and in a short time they are done. It improves the colour to wring the goods out of strong soapsuds before putting them in the dye. This is a permanent colour on wool or silk.

Aniline Violet and Purple.—Acidulate the bath by sulphuric acid, or use sulphate of soda; both these substances render the shade bluish. Dye at 212° Fahr. To give a fair middle shade to 10 lbs. of wool, a quantity of solution equal to ½ to ¾ oz. of the solid dye will be required. The colour of the dyed fabric is improved by washing in soap and water, and then passing through a bath soured by sulphuric acid.

Aniline Black for Dyeing.—Water 20 to 30 parts, chlorate of potassa 1 part, sal-ammoniac 1 part, chloride of copper 1 part, aniline hydrochloric acid 1 part, previously mixed together. It is essential that the preparation should be acid, and the more acid it is the more rapid will be the production of the blacks; if too much so, it may injure the fabric.

New Mordant for Aniline Colours. — Immerse the goods for some hours in a bath of cold water in which chloride or acetate of zinc has been dissolved until the solution shows 2° Baume; for the wool the mordanting bath should be at a boiling heat, and the goods should also be placed in a warm bath of tannin, 90° Fahr., for half an hour. In dyeing, a hot solution of the colour must be used to which should be added, in the case of the cotton, some chloride of zinc, and, in the case of the wool, a certain amount of tannin solution.

To Dye Aniline Yellow.—This colour is slightly soluble in water, and for dyers' use may be used directly for the preparation of the bath dye, but is best used by dissolving 1 lb. of dye in 2 gals. alcohol. Temperature of bath should be under 200° Fahr. The colour is much improved and brightened by a trace of sulphuric acid.

To Dye with Alkali Blue and Nicholson's Blue.—Dissolve 1 lb. of the dye in 10 gals. boiling water, add this by small portions to the dye bath, which should be rendered alkaline by borax. The fabric should be well worked about between each addition of the colour. The temperature must be kept under 212° Fahr. To develop the colour, wash with water and pass through a bath containing sulphuric acid.

Aniline Brown Dye.—Dissolve 1 lb. of the brown in 2 gals. of spirit, specific gravity 8200; add a sufficient quantity to the dye bath, and immerse the fabric. Wool possesses a strong affinity for this colour and no mordant is required.

To Extract Oil Spots from Finished Goods.—Saturate the spot with benzine, then place two pieces of very soft blotting paper under and two upon it, press well with a hot iron, and the grease will be absorbed.

To Preserve Goods and Clothing from Mildew.—Alum, 2 lbs., dissolved in 60 lbs. water; blue vitriol, 2 lbs., dissolved in 8 lbs. of water; to which is added gelatine 1 lb., dissolved in 30 lbs. of water; acetate of lead, ½ lb., dissolved in 30 lbs. of water. The solutions are all hot, and separately mixed, with the exception of the vitriol, which is added.

To Bleach Feathers.—Place the feathers from 3 to 4 hours in a tepid dilute solution of bichromate of potassa, to which, cautiously, some nitric acid has been added (a small quantity only). To remove a greenish hue induced by this solution, place them in a dilute solution of sulphuric acid, in water, whereby the feathers become perfectly white and bleached.

To Clean Straw Bonnets.—First brush them with soap and water, then with a solution of oxalic acid.

Crimson.—For 1 lb. of silk, alum, 3 oz.; dip at hand-heat, 1 hour; take out and drain, while making a new dye, by boiling 10 minutes, cochineal, 3 oz.; bruised nutgalls, 2 ozs.; and cream of tartar, ½ oz., in one pail of water; when a little cool, begin to dip, raising the heat to a boil, continuing to dip 1 hour; wash and dry.

Cinnamon or Brown on Cotton and Silk.—Give the goods as much colour, from a solution of blue vitriol, 2 ozs., to water, 1 gal., as it will take up in dipping 15 minutes; then run it through lime-water; this will make a beautiful sky blue of much durability; it has now to be run through a solution of prussiate of potash, 1 oz., to water, 1 gal.

Aniline Black on Silk or Cotton.—Water, 20 to 30 parts; chlorate of potassa, 1 part; sal-ammoniac, 1 part; chloride of copper, 1 part; aniline, 1 part; and hydrocloric, 1 part; previously mixed together. The fabric or yarn is dried in ageing rooms at a low temperature for 24 hours, and washed afterwards.

To Colour Straw Hats or Bonnets a Beautiful Slate.—First, soak the bonnet in rather strong warm suds for 15 minutes to remove sizing and stiffening; then rinse in warm water, to get out the soap; now scald cudbear, 1 oz., in sufficient water to cover the hat or bonnet; work the bonnet in this dye, at 190° of heat, until you get a light-purple, now have a bucket of cold water, blued with the extract of indigo, ½ oz., and work or stir the bonnet in this, until the tint pleases; dry, then rinse out with cold water, and dry again in the shade. If you get the purple too deep in shade the final state will be too dark.

To Clean Ostrich Feathers.—Cut some white curd soap in small pieces, pour boiling water on them and add a little pearlash. When the soap is quite dissolved, and the mixture cool enough for the hand to bear, plunge the feathers into it, and draw them through the hand till the dirt appears squeezed out of them; pass them through a clean lather with some blue in it, then rinse them in cold water with blue to give them a good colour. Beat them against the hand to shake off the water, and dry by shaking them near a fire. When perfectly dry, coil each fibre separately with a blunt knife, or ivory folder.

To Clean Furs.—For *dark* furs: warm a quantity of new bran in a pan, taking care that it does not burn, to prevent which it must be briskly stirred. When well warmed rub it thoroughly into the fur with the hand. Repeat this two or three times, then shake the fur, and give it another sharp brushing until free from dust. For *white* furs: lay them on a table, and rub well with bran made moist with warm water, rub until quite dry, and afterwards with dry bran. The wet bran should be put on with flannel, then dry with book muslin. Light furs, in addition to the above, should be well rubbed with magnesia or a piece of book muslin, after the bran process, against the way of the fur.

Washing Fluid.—Take 1 lb. sal soda, ½ lb. good stone lime, and 5 quarts of water; boil a short time, let it settle, and pour off the clear fluid into a stone jug, and cork for use; soak your white clothes over night in simple water, wring out and soap wristbands, collars, and dirty or stained places; have your boiler half filled with water just beginning to boil, then put in one common teacupful of fluid, stir and put in your clothes, and boil for half an hour, then rub lightly through *one suds only*, and all is complete.

Chip or Straw Hats or Bonnets may be dyed black by boiling them three or four hours in a strong liquor of logwood, adding a little copperas occasionally. Let the bonnets remain in the liquor all night; then take out to dry in the air. If the black is not satisfactory, dye again after drying. Rub inside and out with a sponge moistened in fine oil; then block. *Red Dye.*—Boil ground Brazil wood in a lye of potash, and boil your straw hats, etc., in it. *Blue Dye.*—Take a sufficient quantity of potash lye, 1 lb. of litmus or lacmus, ground; make a decoction and then put in the straw and boil it.

Dyes for Hats.—The ordinary bath for dyeing hats, employed by the London manufacturers, consists, for twelve dozen, of 144 lbs. of logwood, 12 lbs. of green sulphate of iron or copperas, 7½ lbs. verdigris. The logwood having been introduced into the copper, and digested for some time, the copperas and verdigris are added in successive quantities, and in the above proportions, along with every successive two or three dozens of hats suspended upon the dripping machine. Each set of hats, after being exposed to the bath with occasional airings during forty minutes, is taken off the pegs, and laid out upon the ground to be more completely blackened by the peroxydizement of the iron with the atmospheric oxygen. In three or four hours, the dyeing is completed. When fully dyed, the hats are well washed in running water.

Waterproof Stiffening for Hats.—Mix 18 lbs. of shellac with 1½ lb. of salt of tartar (carbonate of potash), and 5½ gals. water. These materials are to be put in a kettle, and made to boil gradually till the lac is dissolved, when the liquid will become as clear as water, without any scum upon the top, and if left to cool, will have a thin crust upon the surface, of whitish cast, mixed with the light impurities of the gum. When this skin is taken off, the hat body is to be dipped into the mixture in a cold state, so as to absorb as much as possible of it; or it may be applied with a brush or sponge. The hat body, being thus stiffened, may stand till it becomes dry or nearly so; and after it has been brushed, it must be immersed in very dilute sulphuric or acetic acid, in order to neutralise the potash, and cause the shellac to set. If the hats are not to be napped immediately, they may be thrown into a cistern of pure water, and taken out as wanted.

Method of Bleaching Straw.—Dip the straw in a solution of oxygenated muriatic acid, saturated with potash. (Oxygenated muriate of lime is much cheaper.) The straw is thus rendered very white, and its flexibility is increased.

Bleaching Straw Goods.—Straw is bleached by simply exposing it in a closed chamber to the fumes of burning sulphur; an old flour barrel is the apparatus most used for the purpose by milliners, a flat stone being laid on the ground, the sulphur ignited thereon, and the barrel containing the goods to be bleached turned over it. The goods should be previously washed in pure water.

Varnish for faded Rubber Goods.—Black Japan varnish diluted with a little linseed oil.

To Bleach Linen.—Mix common bleaching-powder, in the proportion of 1 lb. to a gallon of water; stir it occasionally for three days, let it settle, and pour it off clear. Then make a lye of 1 lb. of soda to 1 gallon of boiling soft water, in which soak the linen for 12 hours, and boil it half an hour; next soak it in the bleaching liquor made as above; and lastly, wash it in the usual manner. Discoloured linen or muslin may be restored by putting a portion of bleaching liquor into the tub wherein the articles are soaking.

Dye for Feathers.—*Black:* Immerse for 2 or 3 days in a bath, at first hot, of logwood, 8 parts, and copperas or acetate of iron, 1 part. *Blue:* with the indigo vat. *Brown:* by using any of the brown dyes for silk or woollen. *Crimson:* a mordant of alum, followed by a hot bath of Brazil-wood, afterwards by a weak dye of cudbear. *Pink or Rose:* with saf-flower or lemon juice. *Plum:* with the red dye, followed by an alkaline bath. *Red:* a mordant of alum, followed by a bath of Brazil-wood. *Yellow:* a mordant of alum, followed by a bath of turmeric or weld. *Green Dye:* take of verdigris and verditer, of each 1 oz.; gum water, 1 pt.; mix them well and dip the feathers, they having been first soaked in hot water, into the said mixture. *For Purple:* use lake and indigo. *For Carnation:* vermilion and smalt. Thin gum or starch water should be used in dyeing feathers.

Colours for Artificial Flowers. — The French employ *velvet*, *fine cambric*, and *kid* for the petals, and *taffeta* for the leaves. Very recently thin plates of *bleached* whalebone have been used for some portions of the artificial flowers. *Colours and Stains:—Blue:* Indigo dissolved in oil of vitriol, and the acid partly neutralised with salt of tartar or whiting. *Green:* A solution of distilled verdigris. *Lilac:* Liquid archil. *Red:* Carmine dissolved in a solution of salt of tartar, or in spirits of hartshorn. *Violet:* Liquid archil mixed with a little salt of tartar. *Yellow:* Tincture of turmeric. The colours are generally applied with the fingers.

Black Varnish for Chip and Straw Hats.—Best alcohol, 4 ozs.; pulverised black sealing wax, 1 oz.; put them into a phial, and put the phial into a warm place, stirring or shaking occasionally until the wax is dissolved. Apply it when warm before the fire or in the sun. This makes a beautiful gloss.

Easy Method of Preventing Moths in Furs or Woollens.—Sprinkle the furs or woollen stuffs, as well as the drawers or boxes in which they are kept, with spirits of turpentine, the unpleasant scent of which will speedily evaporate on exposure of the stuffs to the air. Some persons place sheets of paper moistened with spirits of turpentine, over, under, or between pieces of cloth, etc., and find it a very effectual method. Many woollen drapers put bits of camphor, the size of a nutmeg, in papers, on different parts of the shelves in their shops, and as they brush their clothes every two, three, or four months, this keeps them free from moths; and this should be done in boxes where the furs, etc., are put. A tallow candle is frequently put within each muff when laid by. Snuff or pepper is very good.

Clothing Renovator.—Soft water, 1 gal.; make a strong decoction of logwood by boiling the extract with the water. Strain; when cool, add 2 ozs. gum arabic in powder; bottle, cork well, and set aside for use; clean the coat well from grease and dirt, and apply the above liquid with a sponge evenly. Dilute to suit the colour, and hang in the shade to dry; afterwards brush the nap smooth, and it will look like new.

Waterproof for Porous Cloth.—Dissolve 2½ lbs. alum in 4 gals. water; dissolve also in a separate vessel the same weight of acetate of lead in the same quantity of water. When both are well dissolved, mix the solutions together; and, when the sulphate of lead resulting from this mixture has been precipitated to the bottom of the vessel in the form of a powder, pour off the solution, and plunge into it the article to be rendered waterproof. Wash and rub it well during a few minutes, and hang it in the air to dry.

To Remove Grease.—Aqua ammonia, 2 oz.; soft water, 1 quart; saltpetre, 1 teaspoonful; shaving soap in shavings, 1 oz.; mix altogether; dissolve the soap well, and any grease or dirt that cannot be removed with this preparation, nothing else need be tried for it.

Waterproofing for Clothing.—Boiled oil, 15 lbs.; beeswax, 1 lb.; ground litharge, 13 lbs.; mix and apply with a brush to the article, previously stretched against a wall or a table, previously well washing and drying each article before applying the composition.

To Renew Old Silks.—Unravel and put them in a tub, cover them with cold water, let them remain one hour; dip them up and down, but do not wring; hang up to drain, and iron while very damp, and they will look beautiful.

Dyes for Furs.—*For Black:* use the hair dye described in these receipts. *Brown:* use tincture of logwood. *Red:* ground Brazil-wood, ½ lb.; water, 1½ quart; cochineal, ½ oz.; boil the Brazil-wood in the water one hour; strain and add the cochineal; boil fifteen minutes. *Scarlet colour:* boil ½ oz. saffron in ½ pint of water, and pass over the work before applying the red. *Blue:* logwood, 7 ozs; blue vitriol, 1 oz.; water, 22 ozs.; boil. *Purple:* logwood, 11 ozs.; alum, 6 ozs.; water, 29 ozs. *Green:* strong vinegar, 1½ pint; best verdigris, 2 ozs., ground fine; sap green, ¼ oz.; mix all together and boil.

Potter's Invisible Waterproofing. — Imbue the cloth on the wrong side with a solution of isinglass, alum, and soap dissolved in water, forming an emulsion of a milky thickness; apply with a brush, rubbing in well. When dry, it is brushed on the wrong side against the grain, and then gone over with a brush dipped in water; afterwards brushed down smooth.

To Raise a Nap on Cloth.—Clean the article well; soak it in cold water for half an hour; put it on a board, and rub the threadbare parts with a half-worn hatter's card filled with flocks, or with a teazle or a prickly thistle until a nap is raised; then lay the nap right way with a hatter's brush, and hang up to dry.

Black Reviver for Cloth.—Bruised galls, 1 lb.; logwood, 2 lbs.; green vitriol, ½ lb.; water, 5 quarts; boil two hours; strain, and it is ready for use.

How to Make 21 Kinds of Ink.—Late improvements in the manufacture of inks are due to the discovery and cheapening of substances which can be used in preparing them. While good common writing inks are easily procured in the market, still they can be manufactured much cheaper by the consumer; and then again there are a variety of special purposes which require inks that are not on sale, and formulæ for making them are very valuable. In this collection we give approved and tested formulæ for everything in the ink line.

Fine Black Ink.

A good black ink can be made by boiling 3 pounds of logwood with sufficient water to leave a residue of 5 quarts. When cold add 3 drachms of yellow bichromate of potash and stir thoroughly. To prevent thickening, add a few drops of solution of mercury salt. It flows freely from the pen. Its colour at first is of a dark indigo-blue tint, changing soon into a permanent black. A beautiful gloss may be given to this or any other black ink by adding a strong solution of shellac and borax.

Fine Black Ink from Aniline.

Black aniline crystals (negrosine) .	1½ ounce.
Dextrine	1 ,,
Corrosive sublimate . . .	5 grains.
Water	2 quarts.

Dissolve the negrosine in a quart of hot water; dissolve the corrosive sublimate and dextrine in the remaining quart, and pour all together. This is a splendid ink, flows freely from the pen, and will keep well.

In making ink use care in buying the best anilines and other ingredients. This is important.

Fine Red Ink.

Eosine aniline	100 grains.
Water	1 pint.

Simply dissolve the aniline in the water. No better bright, fiery red ink can be made.

Fine Violet Ink.

Violet aniline	70 grains.
Alcohol	½ ounce.
Dextrine	½ ,,
Hot water	1 pint.

Dissolve the aniline in the alcohol and the dextrine in the hot water, and mix them.

Fine Blue Ink.

Water blue aniline . . .	1 drachm.
Dextrine	¼ ounce.
Hot water	1 pint.

One-fourth of an ounce of Prussian blue may be used instead of the water blue aniline.

Fine Green Ink.

Green aniline	1 drachm.
Dextrine	¼ ounce.
Hot water	1 pint.

Aniline inks of any colour can be made in a similar manner. Simply get the desired colour of aniline. Maroon ink may be made by mixing equal quantities of black, blue, and red inks; yellow by adding 1¼ drachm of picric acid to 1 pint of hot water.

Copying Ink.

Take 1 pint of the violet-black ink and add 1 ounce each of sugar and gum arabic. This is for what is called moist copying where a press is used. For what is termed dry copying, mix about ⅓ pint of glycerine to a pint of any good black ink. The manuscript, if written on glazed paper, will not dry for hours, and will yield one or two fair, neat, dry copies by simple pressure of the hand. The writing should not be excessively fine, nor the strokes uneven or heavy. The copies and the original are neater than when water is used.

Gaffard's Indestructible Ink.

Lampblack	1 part.
Potash water glass	12 ,,
Aqua ammonia	1 ,,
Distilled water	38 ,,

The potash water glass should be of the consistency of syrup.

Hektograph Ink.

A good purple ink to use on the gelatine copying pad, or hektograph, is prepared as follows:—

Methyl violet	1 ounce.
Water	8 ,,
Glycerine	1 ,,
Alcohol	¼ ,,

Dissolve the methyl violet in the water and add the glycerine. Gently warm the solution for an hour, and after cooling add the alcohol.

When black hektograph ink is desired, instead of the methyl violet use double the amount of negrosine.

White Ink.

An excellent white ink, which can be used with a pen for writing on coloured cards or paper, may be made as follows:—

Flake white	12 drachms.
Mucilage of gum arabic	6 ,,

If too thick, add water; if too thin, more mucilage. Shake well while using.

Rubber Stamp Ink.

Aniline (desired colour)	½ ounce.
Glycerine	2 ,,

Ribbon Ink, for Type-Writers, Dating Stamps, etc.

Aniline	½ ounce.
Alcohol	4 ,,
Glycerine	7 ,,
Water	4 ,,

Dissolve the aniline in the alcohol, and add the other ingredients.

Marking Ink, for Packages and Boxes.

Extract of logwood	8 ounces.
Bichromate of potash	1 ,,
Hydrochloric acid	¾ ,,
Dextrine	4 ,,
Water	½ gallon.

Boil the logwood with the water, add the acid and potash, and lastly the dextrine.

Indelible Ink, for Marking Linen, etc.

Dissolve 5 parts of lunar caustic in 10 parts of spirit of sal-ammoniac. Add to the solution 7 parts of pure soda, 5 of gum arabic, and 12 of water.

Ink for Writing on Metals (valuable for Marking Tools and Instruments).

Muriatic acid	1 ounce.
Nitric acid	½ ,,

Cover the portion of metal you wish to write upon with melted bees-wax, and allow it to cool. Write the inscription plainly with any sharp-pointed instrument through the bees-wax to the metal. Apply the acids with a feather or rag, carefully filling each letter, and let it remain from one to thirty minutes, according to the desired depth of the lettering, after which wash off the beeswax and acids and rub over with a little sweet oil to prevent further rust or tarnish.

Ink Powders.

As in the case of fluid inks there are many formulæ for preparing ink powders. The following are the best:—

Black.—Nut-galls, 1 ounce; copperas, ½ ounce; gum arabic, 7 ounces. Add one clove to this quantity. Or, take negrosine, 1 ounce; dextrine, 3 ounces; mix.

Blue.—Water blue aniline, 1 ounce; dextrine, 5 ounces. Or, soluble Prussian blue, ½ ounce; dextrine, 1 ounce.

Green.—Aniline green, 44 parts; gelatine, 4 parts; and lunar caustic, 2 parts. Or, green aniline, 1 part; dextrine, 4 parts.

Red.—Eosine aniline, 1 ounce; dextrine, 1 ounce.

A teaspoonful to a tablespoonful of the powder is dissolved in 1 pint of water, requiring from ½ to 1 hour to make the solution.

Disappearing Ink.

Boil some nut-galls in aqua fortis, and add to the infusion some gum arabic and a little sulphuric acid. When written on paper this ink is perfectly legible, but will disappear from the paper in a few days.

Invisible Inks.

Invisible inks are those which when first written are not visible, but upon the application of heat or other means the characters are made to appear distinctly. The following are decidedly the best preparations for this purpose:—

Oil of vitriol	1 fluid ounce.
Soft water	1 pint.

This makes a fluid which is perfectly invisible until heat is applied, by holding over a lamp or by placing in an oven, when it changes to a permanent black. Write with a clean steel pen. All invisible inks will show on glazed paper, therefore unglazed paper should be used.

Another singular invisible ink is made as follows:—Oxide of cobalt, ½ ounce; muriatic acid, sufficient to dissolve it; water, 4 ounces; mucilage of gum acacia.

1 drachm. Place in a stained bottle. Characters written with this solution are invisible, but on the application of heat they instantly appear in blue. On cooling they again become invisible.

PECULIARITIES OF THE ARCTIC AND OTHER OCEANS.—In the British expedition under Captain Nares, with the two steamers *Alert* and *Discovery*, to the Polar Sea, it was determined that the depth of that sea, at one point, was about 70 fathoms, that the ice was from 80 to 120, and in many places 200, feet thick, and probably a century old; that a powerful tide sets in from the Pacific under this ice and extends down the long channel as far as the northern part of Smith's Sound. A sledge party advanced over the ice to lat. 83° 20′ 26″ N., the most northerly point as yet ever trod by man. No traces of human life exists north of lat. 81° 52′, where the Esquimaux appear to have crossed the water, here only 15 miles wide, into Greenland, from the large islands which fringe the North American continent on the north. On the *Alert*, mercury was frozen 47 days in all, and, in still weather, the minimum temperature was more than 70° below zero, and the auroras were neither brilliant nor of frequent occurrence during the long Arctic winter, with its unparalleled intensity and duration of darkness produced by the absence of sunlight for 142 days. Birds do not migrate beyond Cape Joseph Henry, on the American coast of the Polar Sea, in lat. 82° 52′ north, and the northern limits of the haunts of wild animals is about 82°. Dwarf oaks, sorrel, poppies, saxifrage, and between 20 and 30 species of flowering plants were found growing in the vicinity of lat. 82° north, together with fossil corals, a workable seam of good coal, and evidences of the former existence of an evergreen forest in lat. 82° 44′. Between the Tropics the temperature of the ocean is from 77° to 84°; it diminishes to 45·5° at 1,000 fathoms depth. In the Arctic Sea the temperature rises from 8° to 10° at 700 fathoms, and 6° at 200 fathoms. Divers report an entire absence of motion in the ocean at a depth of 30 feet, and the solar rays penetrate 200 or 300 ft. Sea water is salt and bitter at the surface, but salt only at profound depths. The component parts, with slight variations, are water, muriatic acid, sulphuric acid, mineral alkali, lime, and magnesia. The deepest sounding on record is 9 miles Young estimates the Atlantic at 3 miles, and the Pacific at 4 deep. Copper globes are compressed at 800 fathoms. Parry sounded in lat. 57° N. long., 24° W., but found no bottom at 1,020 fathoms.

NAUTICAL DISTANCES, LOG LINES.—A nautical mile, the 60th of a degree, is 2026·5 yards; a marine league, or 20 to a degree, is 6079·5 yards. Log-lines are divided into spaces of 50 feet, and the way measured by a half-minute sand-glass, which bears nearly the same proportion to an hour, which 50 feet bears to a mile, the number of knots which run off the reel in half a minute showing the number of miles the vessel sails in an hour. The line should be about 150 fathoms long, having 10 fathoms between the ship and first knot for stray line. Estimating a mile at 6,139·75 feet, and using a 30″ glass, 1 knot = 51 ft. 1·95 in. and 1 fathom, 5 ft. 1·395 in. Or if a 28″ glass is used, and 8 divisions, the result will be thus:—1 knot = 47 ft. 9·024 ins., and 1 fathom = 5 ft. 11·627 ins.

THE DISCOVERY OF COFFEE.—Near the middle of the fifteenth century a poor Arab was travelling through Abyssinia, and, finding himself weak and weary from fatigue, he stopped near a grove. Then, being in want of fuel to cook his rice, he cut down a tree which happened to be covered with dead berries. His meal being cooked and eaten, the traveller discovered that the half-burned berries were very fragrant. He collected a number of these, and on crushing them with a stone he found that their aroma increased to a great extent. While wondering at this he accidentally let fall the substance in a can which contained his scanty supply of water. Lo, what a miracle! The almost putrid liquid was instantly purified. He brought it to his lips; it was fresh, agreeable; and in a moment after the traveller had so far recovered his strength and energy, as to be able to resume his journey. The lucky Arab gathered as many berries as he could, and having arrived at Arden, in Arabia, he informed the mufti of his discovery. That worthy divine was an inveterate opium smoker, who had been suffering for years from the influence of that poisonous drug. He tried an infusion of the roasted berries, and was so delighted at the recovery of his own vigour that in gratitude to the tree he called it cahuah, which in Arabic signifies force. And that is the way in which coffee was discovered.

SCRIPTURE MEASURES OF LENGTH.—The great cubic was 21·888 ins. = 1·824 ft., and the less, 18 ins. A span the longer = $\frac{1}{2}$ a cubit = 10·944 in. = ·912 ft. A span the less = $\frac{1}{3}$ of a cubit = 7·296 ins. = ·608 ft. A hand's breadth = $\frac{1}{6}$ of a cubit = 3·684 ins. = ·304 ft. A finger's breadth = ·124 of a cubit = ·912 ins. = ·076 ft. A fathom = 4 cubits = 7·296 ft. Ezekiel's Reed = 6 cubits = 10·944 ft. The mile = 4,000 cubits = 7,226 ft. The Stadium, $\frac{1}{10}$ of their mile = 400 cubits = 729·6 ft. The Parasang, 3 of their miles = 12·000 cubits or 4 English miles and 580 feet. 33·164 miles was a day's journey—some say 24 miles; and 3,500 ft. a Sabbath day's journey; some authorities say 3,648 ft.

SCRIPTURE MEASURES OF CAPACITY.—The Chomer or Homer in King James' translation was 75·625 gals. liquid, and 32·125 pecks dry. The Ephah or Bath was 7 gals. 4 pts., 15 ins. sol. The Seah, $\frac{1}{3}$ of Ephah, 2 gals. 5 pts., 3 ins. sol. The Hin = $\frac{1}{6}$ of Ephah, 1 gal. 2 pts., 1 in. sol. The Omer = $\frac{1}{10}$ of Ephah, 5 pts., 0·5 ins. sol. The Cab = $\frac{1}{18}$ of Ephah, 3 pts., 10 ins. sol. The Log = $7\frac{1}{72}$ of Ephah, $\frac{1}{2}$ pt., 10 ins. sol. The metretes of Syria (John ii. 6) = Cong. Rom. $7\frac{1}{8}$ pts. The Cotyla Eastern = $\frac{1}{100}$ of Ephah, $\frac{1}{2}$ pt., 3 in. sol. This Cotyla contains just 10 ozs. avoirdupois of rain water. Omer, 100; Ephah, 1,000; Chomer or Homer, 10,000.

					English Money.			
	lbs.	ozs.	dwt.	gr.	£	s.	d.	f.
The Gerah = $\frac{1}{20}$ of a Shekel	—	—	—	11	0	0	1	$\frac{1}{2}$+
The Bekah = $\frac{1}{2}$ Shekel	—	—	4	$13\frac{1}{4}$	0	1	2	$\frac{1}{2}$+
The Shekel	—	—	9	$2\frac{1}{2}$	0	2	4	1
The Manch, or Mini = 60 Shekels	2	3	6	$10\frac{1}{4}$	7	1	5	
The Talent = £353 10*s.* 10*d.*	113	10	1	$10\frac{3}{4}$	353.1110			

TRADE DEPARTMENT.

MISCELLANEOUS STATISTICS.

TIMBER.	Specific Gravity.	Weight in lbs per Cubic Foot.	Tenacity in lbs. per Square Inch.	Crushing Force in lbs. per Square Inch.
Ash	·8	50	17·200	9·000
Beech	·69	43	11·000	9·000
Birch	·71	44	15·000	5·500
Cedar	·48	30	11·000	5·600
Deal, Christiania	·7	44	12·000	6·000
Elm	·6	37	13·000	10 000
Hornbeam	·75	47	20·000	7·000
Larch	·55	34	9·000	5·500
Memel	·6	37	..	...
Mahogany, Spanish	·8	50	16·000	8·000
Oak, English	·93	58	17·000	10·000
Oak, Canadian	·87	54	10·000	6·000
Pine, red	·65	41	12·000	5·800
Pine, yellow	·45	28	11·000	5·100
Teak, Moulmein	·65	41	15·000	12·000
Yew	·8	50	8·000	...
MISCELLANEOUS.				
Asphaltum	·9	56		...
Gutta-percha	·98	61	.	...
India-rubber	·94	59	.	...
Ivory	1·8	112	...	..
FLUIDS.			Boiling point.	Expansion.*
Alcohol	·8	50	173°	·11
Ether	·74	46	100	·07
Oil	·90	56	...	·08
Water, fresh	1·000	62·4	212	·047
Water, sea	1·028	64·1	213	...

GASES.	Water 1	Comparative Weight (Air being 1).	Weight of Cubic Foot in Grains.
Air	·0012	1·000	527
Carbonic Acid	·0018	1·524	800
Carburetted Hydrogen	·0005	·20	220
Hydrogen	·00008	·069	43
Oxygen	·00125	1·103	627

* Expansion of fluids is calculated between 32° and 212° Fahrenheit.

VARNISHES FOR PIPE AND IRON-WORK.

Coal Tar	30	gallons.
Tallow	6	pounds.
Resin	1½	,,
Lampblack	3	,,
Fresh Slacked Lime (finely sifted)	30	,,

Stir all thoroughly together and apply hot.

BEAUTIFUL BRONZE FOR METALS.

Aniline, red (fuchsine)	10 parts.
Aniline, purple	5 ,,
Alcohol, 95 per cent.	100 ,,
Benzoic Acid	5 ,,

Add the anilines to the alcohol and dissolve, help the solution by placing the vessel in a sand or water-bath. As soon as the solution is effected add the benzoic acid, and boil the whole five or ten minutes, until the greenish colour of the mixture is transformed into a fine light-coloured brilliant bronze. Apply with a brush.

COLOURS FOR GLASS PAINTING.

Blue is produced with Cobalt.

Purples, violets and carmines are produced with Purple of Cassius.

Reds, browns, etc., with Peroxide of Iron.

Greens with Silicate of Copper.

Blacks, greys, etc., with Oxide of Manganese, Cobalt and Iron.

Yellows, with Oxide of Uranium, Chromate of Lead, Subsulphate of Iron or Oxide of Lead.

Beautiful yellow tones may be produced on glass by placing on its surface a layer of three parts of pipe-clay, well burnt and pounded, and rubbed up with one part of chloride of silver. The glass is then submitted to heat in a muffle. After cooling, the layer of clay is removed and the glass is stained yellow. The tint depends on the nature of the glass. Glass containing about 8 or 10 per cent. of alumina, takes a more beautiful tint than glass containing only 2 per cent.

EMERALD GREEN.

Oxide of Copper	1 part.
Antimoniac Acid	10 ,,
Flux No. 1	30 ,,

Pulverise together and melt.

GRASS GREEN.

Green Oxide of Chromium	1 part.
Flux No. 3	3 ,,

Triturate and melt.

Lavender Blue, for Ground Tint.

Blue No. 5	4 parts.
Violet of Gold No. 31	3 ,,

Sometimes a little carmine is added.
Pulverise, without melting.

Sulphur Yellow.

Antimoniac Acid	1 part.
Subsulphate of the Peroxide of Iron	8 ,,
Oxide of Zinc	4 ,,
Flux No. 1	36 ,,

Rub together, and melt. If this colour is too deep, the salt is diminished.

SPENCER'S METHOD OF SILVERING WOOD.

The first operation is to take strong alcohol or spirits of turpentine in a glass vessel, and add to it a piece of phosphorus; the vessel must now be placed in hot water for a few minutes, and occasionally shaken, by this means the alcohol will take about 3 per cent. of its bulk of phosphorus. Next procure a weak solution of nitrate of silver, place it in a dish or saucer; the face of the wood must now be dipped in this solution, and let it remain a few minutes to allow capillary attraction to draw it into the wood. This operation being performed, a small portion of the solution of phosphorus must be placed in a capsule or watch glass, and this placed on a sand-bath, that it may gradually evaporate. The wood must now be held with its surface over the vapour, and an immediate change takes place; the nitrate of silver is decomposed, and gives place to metallic silver. When the material to be acted on is not very large, fasten it to the top of a bell-glass receiver, with a bit of pitch or cement, and place this over the capsule on the sand-bath; the phosphorus vapour is by this means equally diffused and not dissipated.

A solution of phosphorus in sulphuric ether also answers, and a solution of gold (chloride) may be used. This elegant process, as applied to wood, and those substances which may be wetted with the solution of nitrate of silver, answers perfectly; but it is obviously limited in its application to those substances which will absorb an aqueous solution.

TO CLEAN GLASS FOR SILVERING.

As the success of the silver process depends greatly on the glass surface being made chemically clean, previous to immersion in the bath, the utmost pains must be taken to accomplish this object. The surface is first covered with thick whiting cream, free from grit, which, when dry is rubbed off with the purest cotton wool. The surface is then wetted entirely with diluted nitric acid, and afterwards thoroughly washed with distilled water, poured over it; the last of all, the piece of coated glass is suspended in a flat vessel containing alcohol, where it remains until the bath is ready to receive it.

TO WRITE, GILD, AND ORNAMENT ON GLASS.

Cut a piece of thin paper to the size of the glass, draw out your design correctly in black lead pencil on paper, then prick through the outline of the letters with a fine needle; tie up a little dry white lead in a piece of rag,—the pounce-bag as it is called. Now place your design upon the glass right side up, and dust it with the pounce-bag; take the paper carefully off, the design will appear in white dots upon the glass; this is to guide you in laying on gold on the opposite side. Now clean the glass well on the side that the gold is to go on; prepare your size in the following manner: Get some clean water and boil it in an enamelled saucepan, put in two or three shreds of the best isinglass; let it boil a few minutes, then strain it through a fine linen rag; when cool it is ready for use.

The great point in glass gilding is to have the glass, the size, and everything you use perfectly clean; a touch of the finger on the glass will tarnish the gold. Use the tip and cushion to put on the gold, laying the gold on as level as possible, as its uniform brightness depends in a great measure upon that point. Use a flat camel-hair tool to lay on the size. Flow the size on and let it drain off when you put the gold on; you can then lay on another coat of gold if desirable. It is now ready for writing. As the letters will have to be written the backward way, turn your drawing face downwards, and pounce as before, but in the gold this time mix a little of the best vegetable black with black Japan, thin with turpentine to a proper consistency; write with this when thoroughly dry; wash off the superfluous gold, and shade as in sign-writing. In ornaments you will have to etch or shade the gold; you will proceed to lay on the gold, and pounce the ornaments exactly as above; then etch or shade it with the point of a slate pencil, or piece of hard wood, slightly wetting the wood when you want a broad or black line.

TO SILVER GLASS.

An easy and economical process. Mix 90 parts by measure of a solution of Rochelle salts with 900 parts distilled water, and boil them in a flask; drop in carefully 20 parts of a solution of silver, and boil again. This solution can be bottled and kept for any length of time. Another fluid has to be prepared by adding ammonia to a solution of nitrate of silver until the precipitate is entirely dissolved; filtering and diluting 1 part of it with 100 parts of water. For use, put equal parts of the two preparations in a suitable vessel, clean the glass well, and immerse it in the mixture until sufficiently coated.

TO SILVER SPECULA AND OTHER GLASS SURFACES.

Make a solution of ammonia nitrate of silver of the strength of three grains to the ounce. Render it very slightly turbid by excess of nitrate of silver, and then filter it. Just before using add to each ounce of the foregoing solution $2\frac{1}{4}$ grains of Rochelle salts. Having scrupulously cleaned the glass intended to be silvered place it in a convenient vessel about one inch from the bottom, supported on three little cones of white wax. The glass plate may be suspended; but in that case there is more difficulty in avoiding vibration, the absence of which is essential to success.

Expose to a northern light, or any other subdued light, and in about 2 hours the deposit of silver will be sufficiently thick. It must now be carefully removed, washed and dried.

When the surface next the glass is to be used as the reflector, the glass side should be cleaned by nitric acid, if the state of its surface, after the silvering, so require; and the silvered side should receive a protecting coating of a good, tough black varnish.

TO POLISH A SILVERED SURFACE ON GLASS.

To accomplish this, rub the surface gently first with a clean pad of fine cotton wool, and afterwards with a similar pad covered over with cotton velvet, which has been charged with fine rouge.

The surface will, under this treatment, acquire a polish of intense brilliancy, quite free from any scratches.

TO STAIN OR COLOUR GLASS—GOLD YELLOW.

Flint Glass	28	pounds.
Tartar of Urine	¼	,,

STAINED GLASS PAINTS—FLESH COLOUR.

Take one ounce of red lead, one ounce red enamel (Venetian glass enamel, from alum and copperas calcined together), grind them to a fine powder, and work this up with alcohol upon a hard stone. When slightly baked, this produces a fine flesh colour.

BLACK COLOUR.

Take 14½ ounces of smithy scales of iron; mix them with 2 ounces of white glass, antimony 1 ounce, manganese ½ ounce.

Pound and grind these ingredients together with strong vinegar.

SILVERING GLASS.

Two distinct methods are adopted for this purpose. The one falsely called silvering, consists of a layer of an amalgam of tin, or similar alloy, to the surface of the glass. The other is a coating of real silver, precipitated from a solution of that metal.

ORANGE WITH RED.

The orange loses its red and appears yellower; and the red becomes more blue, differing as much as possible from orange.

TO STAIN OR COLOUR GLASS.

For Amethyst, Oxide of Manganese.
Blue, Oxide of Cobalt.
Brown, Oxide of Iron.
Green, Black Oxide of Copper.
Purple, Oxide of Gold.
Ruby Red, Suboxide of Copper.
White, Oxide of Tin.
Yellow, Oxide of Silver.

The above substances, pure and well powdered, are either added to the melted contents of the glass pot, or are applied to the surface as in glass staining.

FINE BLUE.

Flint Glass	10	pounds.

Previously melted and cast into water.

Zaffer	6	drachms.
Calcined Copper	½	ounce.

Prepared by putting sheet copper into a crucible and exposing it to the action of a fire not strong enough to melt the copper, and you will have the copper in scales, which you pound.

BRIGHT PURPLE.

Flint Glass	10	pounds.
Zaffer	5	drachms.
Precipitate of Calcium	1	,,

BLACK WALNUT STAIN.

Washing Soda	1½	ounces.
Water	1	quart.
Vandyke Brown	2½	ounces.
Bichromate of Potassa	¼	,,

Boil for 10 minutes and apply with a brush, either in a hot or cold state. This is an excellent stain.

FINE CRIMSON STAIN.

Boil 1 pound good Brazil dust in 3 quarts water for an hour, strain it and add ½ ounce cochineal, boil it again gently for half an hour and it will be fit for use. If required of a more scarlet tint, boil ½ ounce of saffron in 1 quart of water for an hour, and pass over the work previous to the red stain.

TO IMPROVE THE COLOUR OF ANY STAIN

Nitric Acid	1	ounce.
Muriatic Acid	½	,,
Grain Tan	¼	,,
Rain Water	2	,,

Mix it at least two days before using and keep the bottle well corked.

BROWN COLOUR.

White Glass or Enamel	1	ounce.
Good Manganese	½	,,

Grind together.

Red, Rose and Brown colours are made from peroxide of iron prepared by nitric acid.

A FINE YELLOW STAIN FOR GLASS.

Take fine silver laminated thin, dissolved in nitric acid; dilute with abundance of water and precipitate with solution of sea-salt; mix this chloride of silver in a dry powder with three times its weight of pipe-clay well burnt and pounded. The back of the glass pane is to be painted with this powder, for when painted on the face it is apt to run into the other colours.

A PALE YELLOW FOR GLASS.

This can be made by mixing sulphuret of silver with glass of antimony and yellow ochre, previously calcined to a red brown tint.

JAPAN DRYER.

Linseed Oil	1	gallon.
Gum Shellac	¾	pound.
Litharge	½	,,
Burnt Umber	½	,,
Red Lead	½	,,
Sugar of Lead	6	ounces.

Mix, and boil carefully until dissolved; then remove from the fire, and add one gallon spirits of turpentine.

PAINTING.

The art or employment of laying on colour. In the fine arts, the production of a picture or resemblance in colours on a flat surface. The artistic and mechanical consideration of this subject does not come within the province of our volume, but notices of the leading materials employed by both artists and house painters are given under the respective names.

PAINTING, DISTEMPER.

A method of painting generally adopted by the ancients. Water was the principal medium, but various gelatinous and albuminous binders were added to fix the pigments. Of these the most important were glue, size, and white of egg. In modern distemper, as executed by the painters of theatrical scenery, panoramas, etc., spirits of turpentine is largely used as a medium.

TO REMOVE THE SMELL OF NEW PAINT.

Hay sprinkled with a little chloride of lime and left for an hour in a closed room, will remove the smell of new paint.

TO KILL GREASE SPOTS BEFORE PAINTING.

Wash over smoky or greasy parts with saltpetre or very thin whitewash. If soapsuds are used they must be washed off thoroughly, as they prevent the paint from drying hard.

SALMON COLOUR.

White lead and blue, yellow and red.

PEA GREEN.

White lead, yellow and red.

TO PAINT OLD HOUSES.

Water . . . . . . 7 gallons.
Flaxseed . . . . . . 1 pint.
Whitewash, sufficient.
Linseed Oil . . . . . ½ „

Boil the flaxseed in 3 gallons of water; take it off and add the remainder of the water; let it stand to settle. Pour off the water in a pail, and put it in whitewash (Spanish white) to make it as thick as whitewash; then add the linseed oil; stir it well, and apply with a brush.

GOOD IMITATION OF GOLD.

Mix white lead, chrome yellow and burnt sienna until the proper shade is obtained.

STRAW COLOUR.

White lead and yellow.

BROWN.

Venetian and lamp black.

BEAUTIFUL WHITE PAINT.

For inside work, which ceases to smell and dries in a few hours, add one pound of frankincense to two quarts of turpentine; dissolve it over a clear fire, strain it and bottle it for use; then add one pint of this mixture to 4 pints of bleached linseed oil; shake them well together, grind white lead in spirits of turpentine, and strain it; then add sufficient of the lead to make it proper for painting; if too thick in using, thin with turpentine, it being suitable for the best internal work, on account of its superiority.

FOR A PURE WHITE PAINT.

Nut-oil is the best; if linseed oil is used, add ⅓ turpentine.

A good substitute for gold is obtained by grinding White Lead, Chrome Yellow and the dust of Vermilion together.

Mix your colours for writing in boiled oil, and use for drier good size. Other good grounds for gold letters are: Blues, Vermilion, Lake and Saxon.

When your sign is ready for gilding, follow the directions given under the head of "To gild letters on wood."

TO GILD LETTERS ON WOOD.

When your sign is prepared as smooth as possible, go over it with a sizing, made by the white of an egg dissolved in about four times its weight of cold water, adding a small quantity of fuller's earth; this to prevent the gold sticking to any part but the letters. When dry, set out the letters and commence writing, laying on the size as thinly as possible with a sable pencil. Let it stand until you can barely feel a slight stickiness; then go to work with your gold leaf, knife and cushion, and gild the letters.

Take a leaf up on the point of your knife, after giving it a slight puff into the back part of your cushion, and spread it on the front of the cushion as straight as possible, giving it another slight puff, with the heel of your knife forwards. Now cut it into the proper size, cutting with the heel of your knife forwards. Now rub the tip lightly on your hair; take up the gold on the point, and place it neatly on the letters; when they are all covered, get some very fine cotton wool, and gently rub the gold until it is smooth and bright. Then wash the sign with clean water to take off the egg-size.

To paint banners, etc., on cloth or silk, stretch the fabric upon a frame, and finish your design and lettering. Use a size made of bleached shellac dissolved in alcohol, thinned to the proper consistence; go over such parts as are to be gilded or painted, overrunning the outlines slightly, to prevent the colour from spreading.

For inside work the white of an egg makes a good size; lay the gold while the size is still wet; when dry, dust off the surplus gold, and proceed with the shading, painting, etc. A little honey combined with glue makes a good size.

HINTS ON SIGN WRITING.

1. Introduce into your sign a curved line or two, or section of a circle, as it is pleasing to the eye and relieves the stiffness of the straight lines.

2. The space between each letter in the same line must be equal.

3. Each line of letters must begin and end at an equal distance from the side of the board.

4. Never, if you can possibly avoid it, begin or end a line of letters with such letters as "and—to—for—with," etc., but let them come in between the lines of large letters.

5. Always make the most important words, such as the name, business, etc., the largest, most distinct, and easily read of any on the board. You will see exactly what I mean if you examine a good placard. It is only by strict attention to the above rules and constant practice, that you can become a good writer.

GLAZIERS' PUTTY.

Whiting	70 pounds.
Boiled Oil	20 „

Mix. If too thin, add more whiting; if too thick, add more oil.

TO IMITATE BROWN FREESTONE.

First make a pretty thick oil paint of the same colour as the stone to be imitated, which may be done in different ways. The basis is white lead or zinc white, coloured with umber and mass red, or any other pigment which suits you; put it on as usual, and while yet sticky throw common white sand against it; this will not affect the colour, and will make a rough, sandy coat, imitating the surface of the stone.

PATENT YELLOW.

Common Salt	100 pounds.
Litharge	400 „

Grind the above together, with water at a gentle heat,—water being added to supply the loss by evaporation; the carbonate of lead is then washed out with more water, and the white residuum heated till it acquires a fine yellow colour.

CHROME YELLOW.

Sugar of Lead	5 pounds.
Paris White	5 „
Bichromate of Potash	6½ ounces.
Hot water, sufficient.	

Dissolve the sugar of lead, Paris white and bichromate of potash in separate portions of hot water. Mix the sugar of lead and Paris white together, and lastly add the solution of bichromate of potash.

GOLD COLOUR.

Massicot or Naples yellow, with a small quantity of realgar and a very little Spanish white.

A HANDSOME COLOUR FOR OUTSIDE WORK, FOR DOORS, CARTS, WAGGONS, RAILINGS, ETC.—GREY.

Mix white lead with lamp black, using more or less of each material, as you wish to obtain a lighter or a darker shade.

BUFF.

Buff is made from yellow ochre and white lead.

SILVER, OR PEARL GREY.

Mix white lead, Prussian blue, and a very slight portion of black, regulating the quantities you wish to obtain.

FLAXEN GREY.

White lead and Prussian blue, with a small quantity of lake.

CHESTNUT COLOUR.

Red ochre and black for a dark chestnut.

OAK WOOD COLOUR.

Mix three-fourths white lead, one-fourth part umber and yellow ochre, proportions of the last two ingredients being determined by the desired tints.

STONE COLOUR.

White, with a little spruce ochre.

DARK LEAD COLOUR.

Black and white, with a little Prussian blue.

DARK GREEN.

Lampblack and chrome green.

OLIVE COLOUR.

Red, green or black, yellow and red.

BUCK COLOUR.

Yellow ochre and red lead, with a little white.

OLIVE GREEN.

Grind separately Prussian blue and French yellow, in boiled oil, then mix to the tints required with a little burnt white vitriol to act as a drier.

PAINTING, ELYDORIC.

A method of painting having for its object to combine the fresh appearance and finish of water colours with the mellowness of oil painting. The liquid employed as a vehicle for the pigments is an emulsion formed of oil and water by the intervention of a certain portion of gum or mucilage.

WATERPROOF CLOTH.

Cloth coated with linseed oil, to which a little wax and litharge have been added, will be waterproof.

ARTIFICIAL GOLD.

Pure Copper	100 parts.
Tin	17 „
Magnesia	6 „
Sal-ammoniac	½ „
Quicklime	⅛ „
Tartar of Commerce	9 „

The copper is first melted, and the magnesia, sal-ammoniac, lime, and tartar are then added, separately and by degrees, in the form of powder; the whole is now briskly stirred for about ½ hour, so as to mix thoroughly, and then the tin is added in small grains by throwing it on the surface and stirring till it is entirely fused; the crucible is then covered, and the fusion maintained for about thirty-five minutes. The surface is then skimmed, and the alloy is ready for casting.

FRENCH POLISH.

Alcohol	1 pint.
Shellac	¼ pound.
Gum Arabic	1 ounce.
Gum Copal	¼ „

Mix. Bruise them well, and sift them through a piece of muslin, then add the alcohol, and cork tightly. Keep in a warm place, and shake frequently every day till the gums are dissolved, then strain through a piece of muslin.

FRENCH POLISHING.

The method of varnishing furniture by means of rubbing it on the surface of the wood, is of comparatively modern date. To put on a hard face, which shall not be so liable to scratch as varnish, and yet appear equally fine, the French polish was introduced. Below we give a full direction of the process, and also the various preparations of the different compositions necessary.

The varnish being prepared (shellac), the article to be polished being finished off as smoothly as possible with glass paper, and the rubber being made as directed below, proceed to the operation as follows:—

The varnish, in a narrow-necked bottle, is to be applied to the middle of the flat face of the rubber, by laying the rubber on the mouth of the bottle and shaking up the varnish once, as by this means the rubber will imbibe the proper quantity to varnish a considerable extent of surface. The rubber is then to be enclosed in a soft linen cloth, doubled, the rest of the cloth being gathered up at the back of the rubber to form a handle. Moisten the face of the linen with a little raw linseed oil, applied with the finger to the middle of it. Place the work opposite the light, pass the rubber quickly and lightly over its surface uniformly in small circular strokes, until the varnish becomes dry, or nearly so; again charge the rubber as before with varnish (omitting the oil), and repeat the rubbing until three coats are laid on, when a little oil may be applied to the rubber, and two coats more given to it. Proceed in this way until the varnish has acquired some thickness; then wet the inside of the linen cloth, before applying the varnish, with alcohol, or wood naphtha, and rub quickly, lightly, and uniformly, the whole surface. Lastly, wet the linen cloth with a little oil and alcohol without varnish, and rub as before till dry. Each coat is to be rubbed until the rag appears dry; and too much varnish must not be put on the rag at a time. Be also very particular in letting the rags be very clean and soft, as the polish depends, in a great measure, on the care taken in keeping it clean and free from dust during the operation. If the work be porous, or the grain coarse, it will be necessary to give it a coat of clear size previous to commencing with the polish; and when dry, gently go over it with very fine glass-paper. The size will fill up the pores, and prevent the waste of the polish, by being absorbed into the wood, and be also a saving of considerable time in the operation.

BEST FRENCH POLISH.

Shellac	3 parts.
Gum Mastic	1 "
Gum Sandarach	1 "
Spirits of Wine	40 "

The mastic and sandarach must first be dissolved in the spirits of wine, and then the shellac; the process may be performed by putting them into a bottle loosely corked, and placing it in a vessel of water heated to a little below 173° Fahr., or the boiling point of spirits of wine, until the solution be effected; the clear solution may be poured off into another bottle for use. Various receipts for the French polish have been published, in which ingredients are inserted that are insoluble in spirits of wine, and therefore useless; and others contain ingredients that are soluble in water, so as to render the mixture more easily injured.

COMMON FRENCH POLISH.

A solution of shellac in wood naphtha (pyroxilic spirit).

WATERPROOF POLISH.

Gum Benjamin	2 ounces.
Gum Sandarach	$\frac{1}{4}$ "
Gum Anime	$\frac{1}{4}$ "
Alcohol	1 pint.

Mix the gums with the alcohol in a closely stopped bottle. Place the bottle in hot water till the gums are dissolved, then strain off the mixture, shake it up with a quarter of a gill of the best clear papy oil, and put it by for use.

FURNITURE POLISH.

Beeswax, $\frac{1}{2}$ pound; alkanet root, $\frac{1}{4}$ ounce; melt together in a pipkin until the former is well coloured. Then add linseed oil, and spirits of turpentine, of each $\frac{1}{2}$ gill; strain through a piece of coarse muslin.

COMPOSITION FOR SOFT OR LIGHT MAHOGANY.

Boil together cold-drawn linseed oil, and as much alkanet root as it will cover, and to every pint of oil add 1 oz. of the best rose pink. When all the colour is extracted, strain it off, and to every pint add $\frac{1}{2}$ gill spirts of turpentine. This will be a very superior composition for soft and light mahogany.

FURNITURE PASTE.

Turpentine, 1 pint; alkanet root, $\frac{1}{2}$ ounce; digest until sufficiently coloured, then add beeswax, scraped small, 4 ozs.; put the vessel into hot water and stir until dissolved. If wanted pale, the alkanet may be omitted.

TO WAX FURNITURE.

In waxing, it is of great importance to make the coating as thin as possible, in order that the veins of the wood may be distinctly seen. The following preparation is the best for performing this operation: Put 2 ozs. white and yellow wax over a moderate fire, in a very clean vessel, and, when it is quite melted, add 4 ozs. best spirits of turpentine. Stir the whole until it is entirely cool, and you will have a pomade fit for waxing furniture, which must be rubbed over it according to the usual method. The oil soon penetrates the pores of the wood, brings out the colour of it, causes the wax to adhere better, and produces a lustre equal to that of varnish, without being subject to any of its inconveniences. The polish may be renewed at any time by rubbing it with a piece of *fine* cork.

HINTS ON VARNISHES.

It is a common practice, in the manufacture of spirit varnishes, to mix glass or sand with the gum or resin, for the purpose of enabling the alcohol to penetrate more readily into all parts of the mass. M. Ferrari, however, recommends that in place of those substances, a coarsely-powdered charcoal should be used, for the glass or sand generally tends to aggravate the gum or resin at the bottom of the vessel, and to protect it from the solvent, while, on the contrary, the charcoal rather tends to raise and divide it. The most advantageous proportion appears to be 1 oz. of charcoal to 1 lb. of the spirit or the oil of turpentine used.

The uses to which varnishes are to be applied must, of course, determine the choice of them. Good varnishes, prepared with alcohol, are very clear, brilliant, and delicate, and may be applied with success to furniture, and to fancy ornaments, which are kept within doors, and admit of re-varnishing easily; but they have not body nor durability enough for coloured grounds.

TO SILVER SHELLS.

Silver leaf, gum water, sufficient quantity. Grind to a proper thickness, and cover the inside of the shells.

GOLD VARNISH.

Turmeric	1 drachm.
Gamboge	1 ,,
Oil of Turpentine	2 pints.
Thin Mastic Varnish	8 ounces.
Dragon's Blood	7 drachms.

Digest with occasional agitation for fourteen days, in a warm place, then set it aside to fine, and pour off the clear.

ANOTHER.

Dutch Leaf	1 part.
Gamboge	4 ,,
Gum Dragon	4 ,,
Proof Spirits	18 ,,

Macerate for twelve hours, then grind on a stone slab.

LIQUID FOR SILVERING GLASS GLOBES.

1. Tin, 1 part; lead, 1 part; bismuth, 1 part. Melt, then add mercury, 3 parts.

2. Take quicksilver, and add as much tin foil as will just allow it to keep barely fluid.

3. Lead, 1 part; tin, 1 part; bismuth, 1 part. Melt, and just before it sets, add mercury, 10 parts. Pour this into the globe and turn it rapidly around.

TO EXTRACT STAINS FROM SILVER PLATE.

Sal-ammoniac, 1 part; vinegar, 16 parts. Mix and use this liquid with a piece of flannel, then wash the plate in clean water.

SILVERING POWDER.

1. Silver powder (precipitated), 1 part; common salt, 2 parts; cream of tartar, 2 parts. Mix, and apply with friction, then wash the article in slightly alkalised water.

2. Silver dust, 4 parts; common salt, 16 parts; sal-ammoniac, 14 parts; bichloride of mercury, 1 part. Mix with water to a paste, and apply it to the copper (previously cleaned), with a piece of soft leather.

PURE SILVER.

Take silver, dissolve it in nitric acid, and add a solution of salt as long as any precipitate falls, then take the sediment and boil it in water in a bright iron vessel; wash it well with clean water and dry it.

SILVER SOLDER.

1. Silver, 19 parts; copper, 1 part; brass, 10 parts. Melt together.

2. For plating: Silver, 2 parts; brass, 1 part. Mix.

SILVER TREE.

Nitrate of silver, 1 part; distilled water, 35 parts. Dissolve and filter; put the liquid into a suitable bottle in some convenient place, and pour in mercury, 1 part. A most beautiful arborescence will rapidly be formed.

GLASS VARNISH.

This is a solution of soluble glass, and should be thus made:—Fuse together 15 parts of powdered quartz (or of fine sand), 10 parts of potash and 1 of charcoal. Pulverise the mass, and expose it for some days to the air; treat the whole with cold water, which removes the foreign salts, etc. Boil the residue in 5 parts of water until it dissolves. It is permanent in the air, and not dissolved by cold water. Used to protect wood, etc., from fire.

VARNISH TO IMITATE GROUND GLASS.

To make a varnish to imitate ground glass, dissolve 90 grains of sandarach and 20 of mastic in 2 ounces of washed methylated ether; add, in two quantities, a sufficiency of benzine to make it dry with a suitable grain—too little making the varnish too transparent, and excess making it carpy. It is important to use washed ether, free from spirit.

PEARL GREY COPAL VARNISH.

White and black; white and blue; for example, ceruse and lampblack, ceruse and indigo; mix them with the varnish, according to tint required.

BLACK VARNISH FOR HARNESS.

Digest shellac, 12 parts; white turpentine, 5 parts; gum sandarach, 2 parts; lampblack, 1 part; with spirits of turpentine, 4 parts; alcohol, 96 parts.

GREEN COPAL VARNISH.

Verdigris, crystallised verdigris, compound green (a mixture of yellow and blue). The first two require a mixture of white in proper proportions, from a fourth to two-thirds, according to the tint to be given. The white used for this purpose is ceruse, or the white oxide of lead, or Spanish white. Proceed as before.

VARNISH FOR HARNESS.

One-half pound india-rubber, 1 gallon of spirits of turpentine; dissolve by a little heat to make it into a jelly, then take equal quantities of hot linseed oil and above mixture, and incorporate them well on a slow fire.

INDIA-RUBBER VARNISHES.

1. Cut up 1 lb. of india-rubber into small pieces, and diffuse in ½ lb. of sulphuric ether, which is done by digesting in a glass flask on a sand-bath. Then add 1 lb. pale linseed oil varnish, previously heated, and,

after settling, 1 lb. of oil of turpentine, also heated beforehand. Filter, while yet warm, into bottles. Dries slowly.

2. Two ounces of india-rubber finely divided and digested in the same way with $\frac{1}{4}$ lb. of camphene, and $\frac{1}{2}$ oz. of naphtha or benzole. When dissolved, add 1 oz. of copal varnish, which renders it more durable. Principally for gilding.

3. In a wide-mouthed glass bottle, digest 2 ozs. of india-rubber in fine shavings, with 1 lb. of oil of turpentine, during two days without shaking, then stir up with a wooden spatula. Add another pound of oil of turpentine and digest, with frequent agitation, until all is dissolved. Then mix $1\frac{1}{2}$ lb. of this solution with 2 lbs. of very white copal oil varnish, and $1\frac{1}{2}$ lb. of well boiled linseed oil; shake and digest in a sand-bath, until they have united into a good varnish. For morocco leather.

4. Four ounces india-rubber in fine shavings are dissolved in a covered jar by means of a sand-bath, in 2 lbs. of crude benzole, and then mixed with 4 lbs. of hot linseed oil varnish, and $\frac{1}{2}$ lb. of oil of turpentine. Dries very well.

5. Melt 1 lb. of resin, and add gradually $\frac{1}{2}$ lb. of india-rubber in very fine shavings, and stir until cold. Then heat again slowly, add 1 lb. linseed oil-varnish, heated, and filter.

6. Dissolve 1 lb. of gum damar, and $\frac{1}{2}$ lb. of india-rubber, in very small pieces, in 1 lb. of oil of turpentine, by means of a water-bath. Add 1 lb. of hot oil varnish and filter.

7. India-rubber in small pieces, washed and dried, are fused for three hours in a close vessel, on a gradually heated sand-bath. On removing from the sand-bath, open the vessel, and stir for ten minutes, then close again, and repeat the fusion on the following day, until some globules appear on the surface. Strain through a wire sieve.

8. *Varnish for Waterproof Goods.*—Let $\frac{1}{4}$ lb. of india-rubber, in small pieces, soften in $\frac{1}{2}$ lb. of oil of turpentine, then add 2 lbs. of boiled oil, and let the whole boil for two hours over a slow coal fire. When dissolved, add again 6 lbs. of boiled linseed oil, and 1 lb. of litharge, and boil until an even liquid is obtained. It is applied warm.

9. *Gutta-Percha Varnish.*—Clean $\frac{1}{4}$ lb. of gutta-percha in warm water from adhering impurities, dry well, dissolve in 1 lb. of rectified resin oil, and add 2 lbs. of linseed oil varnish, boiling hot. Very suitable to prevent metals from oxidation.

MAHOGANY VARNISH.

Sorted gum anime 8 lbs., clarified oil 3 gals., litharge and powdered dried sugar of lead, of each $\frac{1}{4}$ lb.; boil till it strings well, then cool a little, thin with oil of turpentine $5\frac{1}{2}$ gals., and strain.

GREEN PAINT FOR OUTDOOR WORK.

Grind powdered charcoal and linseed oil with sufficient litharge as dryer; thin for use with well boiled linseed oil. This will make a black paint and a good one. Then to this black paint add sufficient ochre to make the shade of green required. It will not fade.

HAIR VARNISH.

Dissolve 1 part of clippings of pig's bristles, or of horse-hair in 10 parts of drying linseed oil by heat. Fibrous materials (cotton, flax, silk, etc.), imbued with the varnish and dried, are used as a substitute for hair-cloth.

VARNISH FOR IRON.

Take oil of turpentine, add to it drop by drop, and while stirring, strong sulphuric acid, until a syrupy precipitate is quite formed, and no more of it is produced on further addition of a drop of acid. The liquid is now repeatedly washed with water, every time refreshed after a good stirring, until the water does not exhibit any more acid reaction on being tested with blue litmus paper. The precipitate is next brought upon a cloth filter, and, after all the water has run off, the syrupy mass is fit for use. This thickish magma is painted over the iron with a brush; if it happens to be too stiff, it is previously diluted with some oil of turpentine. Immediately after the iron has been so painted, the paint is burnt by a gentle heat, and, after cooling, the black surface is rubbed over with a piece of woollen stuff, dipped in and moistened with linseed oil.

According to the author, this varnish is not a simple covering of the surface, but it is chemically combined with the metal, and does not, therefore, wear off or peel off, as other paints or varnishes do from iron.

VARNISH FOR OIL PAINTINGS.

Digest at a slow heat gum sandarach, 2 parts; gum mastic, 4 parts; balsam copaiba, 2 parts; white turpentine, 3 parts; with spirits of turpentine, 4 parts; alcohol (95 per cent.) 56 parts.

VARNISH FOR PAINTINGS AND PICTURES.

Honey, 1 pint; the whites of 2 dozen fresh eggs; 1 oz. of good clean isinglass; 20 grains of hydrate of potassium; $\frac{1}{2}$ oz. of chloride of sodium; mix together over a gentle heat of 80 or 90 degrees Fahrenheit. Be careful not to let the mixture remain long enough to coagulate the albumen of the eggs; stir the mixture thoroughly, then bottle. It is to be applied as follows: 1 tablespoonful of varnish added to $\frac{1}{2}$ tablespoonful of good oil of turpentine, then spread on the pictures as soon as mixed.

OAK VARNISH.

1. Clear pale resin, $3\frac{1}{2}$ lbs.; oil of turpentine, 1 gallon; dissolve.

2. Clear Venice turpentine, 4 lbs.; oil of turpentine, 5 lbs.; mix. Both are good common varnishes.

RED COPAL VARNISH.

1. Vermilion, red oxide of lead (minnium), red ochre, or Prussian red, etc., and proceed as before.

2. Dragon's blood, brick red, or Venetian red, etc., and proceed as before.

VARNISH FOR STRAW HATS.

Take either red or black sealing wax; to every two ounces of sealing-wax, add one ounce of rectified spirits of wine; pound the wax fine, then sift it through a fine lawn sieve, till you have made it extremely fine; put it into a large phial with the spirits of wine; shake it; let it stand near the fire forty-eight hours, shaking it often; then with a brush (a hog's bristle brush) lay it all over the hat (or basket). Let it dry and then repeat the operation.

VARNISH FOR CHROMOS.

The best varnish for chromos is made of gum mastic dissolved in spirits of turpentine. It should be of such thickness as to spread easily and evenly with a common varnish brush. If a chromo is not oil colours, two coats of size, made of isinglass and water, should be given to it first. When the size is dry, the varnish should be laid on. Two or three coats may be needed to get a good surface, which should be perfectly free from cracks. This varnish may be cleaned with a soft sponge and soap and water. It is equally serviceable for maps and drawings as for chromos or paintings.

DAMAR VARNISH.

Gum Damar	10 parts.
Gum Sandarach	5 ,,
Gum Mastic	1 ,,

Digest at a gradual heat, occasionally shaking, with spirits of turpentine, 20 parts. Finally add more spirits of turpentine to give the consistency of syrup.

VARNISH FOR PICTURE FRAMES.

Alcohol	4 oz.
Linseed Oil	4 ,,
Balsam of Fir	½ ,,
Sulphuric Ether	½ ,,

Mix.

CRYSTAL VARNISH.

Gum Mastic	3 ounces.
Alcohol	1 pint.

Dissolve. Use to fix pencil drawing.

POLISH FOR DARK COLOURED WOOD.

Seed-lac	1 ounce
Gum Guaiacum	2 drachms.
Dragon's Blood	2 ,,
Gum Mastic	2 ,,
Alcohol	1 pint.

Mix. Cork the bottle tightly, and keep in a warm place, until the gums are properly dissolved, strain off for use, adding

Linseed oil	½ gill,

and shake up well.

VARNISH FOR COACHMAKERS.

Amber	16 ounces.
Linseed Oil (boiling hot)	½ pint.
Powdered Resin	3 ounces.
Asphaltum	3 ,,
Warm Oil of Turpentine	1 pint.

Melt the amber in an iron pot, and add the linseed oil, resin, and asphaltum. When the materials are well united, by stirring over the fire they are removed, and after cooling some time, add the warm turpentine.

AMBER VARNISH—PALE.

Amber, Pale and Transparent	6 pounds.
Linseed Oil (hot)	2 gallons.
Oil of Turpentine	4 ,,

Fuse the amber and add the linseed oil; boil till it is stringy. When cool add the turpentine.

BLACK VARNISH FOR IRONWORK.

Asphaltum	48 pounds.
Boiled Oil	10 gallons.
Red Lead	7 pounds.
Litharge	7 ,,
White Copperas	3 ,,
Dark Gum Amber, fused	8 ,,
Linseed Oil (hot)	2 gallons.
Turpentine	30 ,,

Boil the asphaltum, boiled oil, red lead and litharge for two hours, then add the amber and boil again for two hours, or till a little mass when cooled may be rolled into pills. Lastly thin down with turpentine. An excellent varnish for the ironwork of carriages.

AMBER VARNISH.

Amber	1 pound.
Pale Boiled Oil	10 ounces.
Turpentine	1 pint.

Reduce the amber to a semi-liquid by heat; then add the oil, mix, remove it from the fire, and when cooled a little, stir in the turpentine.

BLACK AMBER VARNISH.

Amber	1 pound.
Boiled Oil	½ pint.
Powdered Asphaltum	6 ounces.
Oil of Turpentine	1 pint.

Melt the amber as before described, then add the asphaltum previously mixed with the cold oil, and afterwards heated very hot; mix well. Remove the vessel from the fire, and when cooled a little add the turpentine also made warm.

TO IMPROVE COMMON CARMINE.

Take carmine, 1 part; water of ammonia to dissolve. Digest in the sun until the ammonia is saturated with the colouring part of the carmine, then precipitate the colour with alcohol and acetic acid. Wash the precipitate carefully with alcohol and dry it.

VARNISH FOR PLASTER CASTS.

White Soap	½ ounce.
White Wax	½ ,,
Water	2 pints.

Boil together in a clean vessel for a short time. This varnish is to be applied when cold with a soft brush.

TO BRONZE PLASTER CASTS.

Give the casts a coating of oil or size varnish, and when this is nearly dry apply with a dabber of cotton or a camel-hair pencil and of the metallic bronze powders; or the powder may be placed in a little bag of muslin and dusted over the surface, and afterwards finished with a wad of linen. The surface must be afterwards varnished.

MODELLING IN CLAY.

Knead dry clay with glycerine instead of water, and a mass is obtained which remains moist and plastic for a considerable time, being a great convenience to the modeller.

GERMAN CARMINE.

Cochineal	1 pound.
Water	7 gallons.

Boil for five minutes, then add—

Alum	1 ounce.

Boil for five minutes more, filter and set aside the decoction for three days; then decant the liquor and dry the carmine in the shade. The remaining liquor will still deposit colour of an inferior quality by standing.

TO STAIN WOOD LIKE EBONY.

Take a solution of sulphate of iron (green copperas), and wash the wood over with it two or three times; let it dry, and apply two or three coats of a strong hot decoction of logwood; wipe the wood, when dry, with a sponge and water, and polish with linseed oil.

TO STAIN MAHOGANY COLOUR.

Pure Socotrine Aloes	1 ounce.
Dragon's Blood	½ ,,
Alcohol	1 pint.

Dissolve and apply two or three coats to the surface of the wood; finish off with wax or oil, tinged with alkanet.

PALE CARRIAGE VARNISH.

Copal	32 parts.
Pale Oil	80 ,,

Fuse and boil until stringy, then add—

Dried White Copperas	1 part.
Litharge	1 ,,

Boil again, then cool a little and mix—

Spirits Turpentine	150 parts.

While making the above, take gum anime, 32 parts, pale oil, 80 parts; dried sugar of lead, 1 part; litharge, 1 part; spirits of turpentine, 170 parts. Pursue the same treatment as before, and mix the two varnishes while hot.

TO STAIN WOOD BLACK.

Chip Logwood	½ pound.
Water	2 quarts.
Pearlash	1 ounce.
Logwood	½ pound.
Verdigris	½ ounce.
Green Copperas	½ ,,
Rusty Steel Filings	½ pound.

Boil the chip logwood in the water, then add the pearl ash, and apply it hot to the work with a brush. Proceed with the other ingredients in a similar manner, after straining off, and with this go over the work a second time.

FINE BLACK.

Boil 1 pound of logwood in 4 quarts of water, add a double handful of walnut peel or shells; boil it up again, take out the chips, add 1 pint best vinegar, and it will be fit for use; apply it boiling hot. This will be improved by applying a hot solution of green copperas, dissolved in water (an ounce to a quart), over the first stain.

HOW TO PAINT A CARRIAGE.

When the woodwork of a carriage comes into the shop, examine it closely, and if the grain has raised in any place, or it wants smoothing with sand paper, be sure you do it before you prime the work, then dust it off and put on the priming coat, as given below. Be sure and have the paint go into the cracks, checks, or screw heads, so that they have at least one coat of paint over the surface which is to be puttied up.

WHEN TO APPLY PAINT.

Paint, to last long, should be put on early in winter or spring, when it is cold, and no dust flying. Paint put on in cold weather forms a body or coat upon the surface of the wood that becomes hard and resists weather, or an edged tool even, like slate.

GENERAL DIRECTIONS FOR HOUSE PAINTING.

Oil paint dries with a gloss; turpentine makes a dead surface, and in using paints containing both oil and turpentine, the gloss will be less as the proportion of oil is diminished.

PAINT SIZE.

Stir a small quantity of litharge and red lead into some boiled oil; let it stand, shaking frequently, until bleached; then bottle. Raw oil makes a slower drying size.

TO PREPARE OIL FOR COACH PAINTING.

To prepare raw oil for use in coach painting, it will be necessary to add one-fifth part of good brown japan to four of oil. If paint requires any further drier, equal parts of sugar of lead and white vitriol ground together can be used, to the amount of one ounce to the pound of paint, or the same amount of patent drier.

PRIMING COATS.

For the priming coat of a carriage gearing and body, use the same kind of paint, to wit: White lead mixed in the above prepared raw oil, and about one-eighth part of turpentine, with a shade of lampblack, if your carriage is to be a dark colour.

PAINTING HOUSES.

In painting a house, use paints containing both oil and turpentine. The gloss will be less as the proportion of oil is lessened. Paints require more dryer in cold than hot weather, but it is more durable in outside work if applied in cold weather. Successive coats of paint should have at least a day intervene between them for drying. Dark colours should have glossy finish. Before commencing to paint, the surface must be perfectly dry. The paint must be thoroughly mixed, both before commencing and during the progress of the work; if this is neglected the heavy ingredients are apt to settle, leaving a larger proportion of oil and turpentine on the surface

PAINTS.

Knots, to kill.—This is a difficult job for the painter, but if these directions are followed, perfect satisfaction will be the result. Take a hot iron and press it against the knot, by which means you extract the pitch, after which use the size and red lead.

Another plan is gum shellac mixed with red lead, or gutta-percha dissolved in ether. But if the work is a fine one, after removing the iron scrape the pitch off with a knife, after which size the knot with oil size and then lay on it a leaf of gold or silver, after which give it two coats.

Mixing.—In mixing paints observe that for outdoor work you must use principally or wholly boiled oil, unless it be for the decoration part of the house, etc., then mix as for indoor work. For inside work use linseed oil, turpentine, and a little "drier," observing that the less oil the less will be the gloss, and that for "flatted" white, etc., the colour being ground in oil, will scarcely require any further addition of that article, as the object is to have it dull. The best "driers" are ground litharge and sugar of lead; the former for dark and middle tints, and the latter for light ones.

PAINTING ZINC.

Painters have always found it no easy matter to make oil colours adhere to sheet zinc. Boetteger recommends the employment of a mordant, so to speak, of the following composition:

One part chloride of copper, one of nitrate of copper, and one of sal-ammoniac, are to be dissolved in sixty-four parts of water, to which solution is to be added one part of commercial hydrochloric acid. The sheets of zinc are to be brushed over with this liquid, which gives them a deep black colour. In the course of from twelve hours to twenty-four hours they become dry, and to their now dirty grey surface any oil will firmly adhere. Some sheets of zinc prepared in this way and afterwards painted have been found to withstand all the changes of winter and summer.

PREMIUM PAINT WITHOUT OIL OR LEAD.

Slake stone lime with boiling water in a tub or barrel to keep in the steam; then press 6 quarts through a fine sieve. Now to this quantity add 1 quart of coarse salt, and 1 gal. of water; boil the mixture and skim it clear. To every 5 gals. of this skimmed mixture add 1 lb. of alum, $\frac{1}{2}$ lb. of copperas, and by slow degrees $\frac{3}{4}$ lb. of potash, and 4 quarts of sifted ashes or fine sand; add any colouring desired.

A DURABLE OUTSIDE PAINT.

Water Lime	2	parts.
White Lead in Oil	1	,,

Mix them thoroughly by adding best boiled linseed oil, enough to prepare it to pass through a paint mill; after which temper with oil till it can be applied with a common paint brush. Make any colour to suit. It will last three times as long as lead paint.

BLUE COLOUR FOR CEILINGS.

Blue Vitriol	1	pound.
Best Whiting	$\frac{1}{2}$	,,
Water	3	quarts.

Boil all together for about three hours; stir it frequently while boiling, and also on taking it off the fire. When it has stood till quite cold pour off the blue liquid, then mix the cake of colour with good size, and use it with a plasterer's brush in the same manner as whitewash, either for walls or ceilings.

WHITEWASH THAT WILL NOT RUB OFF.

Mix half a pail of lime and water ready to put on the walls, then take $\frac{1}{4}$ pint flour, mix it up with water; then pour boiling water upon it in a sufficient quantity to thicken it, then pour it while hot into the whitewash, stir all well together, and it is ready for use.

TO MAKE A GOOD PAINT WITHOUT LEAD OR OIL.

Whiting	5	pounds.
Skimmed Milk	2	quarts.
Fresh Slaked Lime . . .	2	ounces.

Take a small quantity of the milk and put the lime in to form a cream-like consistence; add the balance of the milk and crumble the whiting upon the surface of the fluid, in which it gradually sinks. Stir or grind, as is usually done with other paints.

BEAUTIFUL PAINT FOR WALLS.

Roman Vitriol	4	pounds.
Boiling Water	4	quarts.
Pearlash	2	pounds.
Powdered Yellow Arsenic . .	$\frac{1}{4}$	,,

Dissolve the Roman vitriol in the boiling water and add the pearlash, and stir the mixture well until effervescence ceases, then add the yellow arsenic and stir the whole together. Lay it on with a paint brush, and if the wall has not been painted before, two or three coats will be required.

FLEXIBLE PAINT FOR CANVAS.

Dissolve Soap	$2\frac{1}{2}$	pounds.
Boiling Water	$1\frac{1}{2}$	gallons.
Good Oil Paint	140	pounds.

Cut the soap (good yellow) in slices and put in the boiling water, then add the oil paint. Grind the solution well.

PAINT FOR OLD WEATHER-BOARDS.

Boiled Linseed Oil . . .	5	gallons.
Raw Oil	4	,,
Benzine	1	,,
Rocky Mountain Vermilion . .	80	pounds.

Mix.

GRAY OR STONE-COLOUR PAINT FOR BUILDINGS.

White Lead in Oil . . .	78	parts.
Boiled Oil	$9\frac{1}{2}$	,,
Raw Oil . . .	$9\frac{1}{2}$	,,
Spirits Turpentine . . .	3	,,
Turkey Umber . . .	$\frac{1}{2}$	,,
Lampblack . . .	$\frac{1}{4}$	,,

Mix.

COMPOUND COLOURS FOR PAINTERS.

BLUE.

Grind Prussian blue in turps, other blue, very fine in linseed oil; mix with white paint to the colour required.

STRAW

A mixture of chrome yellow and white lead, oil and turps.

STEEL.

Mix ceruse, Prussian blue, fine lac, and vermilion, with oil and turps.

PURPLE.

White lead, Prussian blue, and vermilion, with oil and turps.

FRENCH GREY.

White lead and Prussian blue tinged with vermilion, and for the last coat substitute carmine or lake for vermilion.

DRAB.

White lead with a little Prussian blue and French yellow, linseed oil and turps.

Another Drab.

White lead with a little Prussian blue and lampblack, linseed oil and turps.

DARK RED—FOR COMMON PURPOSES.

Mix English Venetian red in boiled oil, with a little red lead and litharge, to give a drying quality.

Lighter Red.

Mix together equal parts of Venetian red, and red lead in boiled oil and turps.

IMITATION OF VERMILION.

Grind together in oil, red lead and rose pink.

DEEP RED.

Mix in oil, vermilion, with a dust of Venetian red or red lead.

UNFADING ORANGE.

This is a mixture of orange lead and French or stone yellow, oil and turps.

BRIGHT YELLOW FOR FLOORS.

White lead and linseed oil, mixed with some French yellow, and a little chrome yellow to brighten it, some red lead, burnt white vitriol and litharge added to give it a drying quality. This colour is mixed with equal parts of boiled oil and turpentine and used very thin.

DARK YELLOW.

Mix French yellow in boiled oil, adding to a little red lead or litharge to give the paint a drying quality.

LIGHT YELLOW.

This is a mixture of French yellow and white lead, with oil and turpentine.

Another.

French yellow, white lead and red lead.

Another.

This is a mixture of Prussian blue, French yellow, a small portion of Turkey umber, and a little burnt vitriol.

FOR DISTEMPER.

Use indigo and yellow pink mixed with whiting or white lead powder.

FREESTONE COLOUR.

A mixture of red lead, Venetian red, French yellow and lampblack, varying the shade according to taste with linseed oil and turpentine.

MAKING GOLD LEAF.

Perhaps one of the most interesting mechanical operations of the present day is the manufacture of gold leaf. Strange as it may seem, in this branch of business little or no machinery is used, and most, if not all, of the gold leaf used in the arts is produced by the hand hammer.

The art of foliating, or beating gold into thin leaves to be used for gilding, was practised by the ancient Hebrews and Egyptians, and therefore it cannot be claimed as one of the new discoveries of this fast age. A modern improvement, however, has been made, which replaces parchment with "gold beater's skin," which is prepared from the outer membrane of the large intestines of the ox. The intestine is partially rotted, in order to facilitate the removal of the membrane, which is cleaned, dried, beaten and pressed between paper, and also with alum, isinglass, and the white of an egg, the result being a pure, clean and tough membrane, which will bear but slight injury after a continuous beating for several months with a 12-pound hammer.

To produce light and dark shades of gold leaf, the metal is alloyed with silver and copper. The addition of the baser metals lessens the malleability, and as the leaf is sold by superficial measure, and not by weight, adulteration is kept at the minimum. The pure gold having been brought to the desired colour by the addition of silver or copper, it is cast into ingots three-fourths of an inch wide and of 2 ozs. weight. These ingots are passed between polished steel rollers and flattened out into a ribbon of $\frac{1}{800}$ inch thick. It is annealed and cut into pieces one inch square. The metal is now about ready for the merciless hammering it is to receive from the gold-beater, who prepares a pile of 150 leaves of the metal in layers, with leaves of vellum, and encloses the whole mass in a double parchment case. Now, with a 16-pound hammer he beats the pack until the inch pieces are increased to four inches square. The next movement is to remove the leaf, divide it into four parts, and prepare another pile or pack, this time using gold-beater's skin instead of vellum, and enclosing it, as before, in a parchment case. This pack is beaten with an 8-pound hammer; another quartering produces 2,400 leaves, having an area of about 190 times that of the ribbon, or a thickness of about $\frac{1}{200000}$ inch.

The marvellous malleability of gold is proven when it is stated that an ounce of it has thus been beaten out or extended to a surface of nearly 100 square feet. The beating causes ragged edges, which are cut away, and as "scrap" are again subjected to the mauling process. After the last beating the leaf is handled by means of wooden pincers, laid on a cushion, blown out flat, and cut into squares of 3⅜ inch,—twenty-five of these make what is known as a book. The leaves of the book are rubbed with red chalk to prevent the gold from adhering. The application of machinery to gold-beating has been attempted, but with indifferent success.

Probably the work could be done by power-hammers, but to manipulate such a hammer would require a gold-beater to learn his trade over again, and to also learn the art of making a gold-beating power-hammer. Undoubtedly, when some clever and ingenious gold-beater sees what a field there is for a machine that will produce a cheap leaf with a smaller expenditure of labour than is now needed, we shall have such a machine, and the cost of gold leaf will be considerably lower than at present. The quantity of gold in a book of gold-leaf is a mere nothing. Most of the leaf in the market is so thin that it appears semi-transparent and of a green colour when held up to the light. As it costs two shillings per book at retail, it can be readily seen that the labour upon it is worth more than the metal.

TO MAKE GOLD SOLUTION FOR ELECTRO-PLATING.

Gold Coin . .	5 grains.
Pure Copper . . .	5 ,,
Pure Silver . .	4 ,,
Nitric Acid	1 ounce.
Muriatic Acid . . .	2 ,,

Mix. The silver will not be taken into solution as are the other two metals, but will gather at the bottom of the vessel. Next add—

Powdered Sulphate of Iron .	1 ounce.
Powdered Borax . . .	½ ,,
Pure Table Salt . . .	25 grains.
Hot Rain-water . . .	1 quart.

Upon this the gold and copper will be thrown to the bottom of the vessel with the silver. Let stand till fully settled, then pour off the liquid carefully, and refill with boiling water as before. Continue to repeat this operation until the precipitate is thoroughly washed; or in other words, fill up, let settle, and pour off so long as the accumulation at the bottom of the vessel is acid to the taste. You now have about an 18-carat chloride of gold. Add cyanuret of potass. 1⅛ oz., mixed with 1 quart of rain-water, the latter heated to the boiling point; shake up well, then let stand about 24 hours and it will be ready for use.

Platina may be used as an alloy instead of silver solution for a darker coloured plate; guinea gold may be made by adding to the above 1 oz. of dragon's blood and 5 grs. of iodide of iron. If you desire an alloyed plate, proceed as first directed without the silver or copper, and with 1½ oz. of sulphuret of potass. in place of the iron, borax, and salt.

SILVER-PLATING FLUID.

Nitrate of Silver (Crystals) .	1 ounce.
Soft Water	12 ,,
Cyanuret of Potash . .	2 ,,

Dissolve the silver in the soft water and add the cyanuret of potash; shake the whole together, and let it stand till it becomes clear. Have ready some ½-oz. phials, and fill half full of Paris white or fine whiting; and then fill up the bottles with the liquor, and it is ready for use The whiting does not increase the coating powder, it only helps to clean the articles, and save the silver fluid, by half filling the bottles.

SILVER SOLUTION FOR ELECTRO-PLATING.

Cyanuret of Potass. . .	⅛ ounce.
Good Silver	1 ,,
Nitric Acid	2 ,,
Pure Rain-water . . .	½ ,,

Cut the silver into strips, and mix together in a glass vessel. If solution does not begin at once, add a little more water, continue to add a very little at a time till it does. In the event it starts off well, but stops before the silver is fully dissolved, you may generally start it up again all right by adding a little more water. When the solution is effected, add 1 quart of warm rain-water, and a large tablespoonful of common salt. Shake well and let settle, then proceed to pour off and wash through other waters. When no longer acid to the taste, put in 1 oz. of the mixture, and add a little of the cyanuret of potash with 1 quart of pure rain-water. After standing about 24 hours it will be ready for use.

TO REMOVE TARNISH ON ELECTRO-PLATED GOODS.

Cyanuret of Potash . .	½ pound.
Rain-water	2 gallons.

Immerse the articles from 10 to 15 minutes, or until the tarnish is removed. After immersion the articles must be taken out and thoroughly rinsed in two or three waters, then dried with a soft linen cloth.

STERLING SILVER.

Sterling silver consists of pure silver 11 oz. and 2 dwts., and fine copper, 18 dwts.

TO FROST AND WHITEN SILVER GOODS.

Sulphuric Acid . . .	1 drachm.
Water	4 ounces.

Mix. Heat and immerse the silver in it until frosted as desired, then wash off clean and dry with a soft linen cloth, or in fine clean sawdust.

Note.—For whitening, only a small proportion of acid may be used.

GILDER'S PICKLE.

Alum	1 ounce.
Common Salt	1 ,,
Nitre	2 ,,
Water	½ pint.

Dissolve in the water.

The above is used to impart a rich colour to gold surfaces, especially of trinkets. Its application should not be too long continued, as it dissolves a small portion of the gold. For common purposes it is best used largely diluted with water.

GILDING VARNISH.

This is a mere variety of gilding applied to equipages, furniture, mirrors and picture frames, etc. The surface being highly varnished and polished before it receives the size or gold colour, and after the gilding has become quite dry, a coat of spirit varnish, fumed with the chafing dish as above, is applied, followed by two, three or more coats of the best copal varnish, at intervals of three or four days each. The whole is lastly carefully polished with tripoli and water.

SILVER-PLATING POWDER.

Chloride of Silver	3 ounces.
Salt of Tartar	6 ,,
Prepared Chalk	2 ,,
Common Salt	3 ,,

Mix well. Dip a moist cork into this powder and rub the article to be silvered.

TO GILD SILVER WITH GOLD.

Beat a four-shilling piece thin, and dissolve it in 2 ozs. of aqua regia; dip clean rags in it and let them dry; burn the rags, and with the tinder thereof rub the silver with a little spittle; be sure first that the silver be clean from grease.

The liquid used by tinsmiths and other workmen to cause soft solder to adhere to copper, brass and even iron, about which some maintain a secrecy, is merely a crude chloride of zinc. To make it, put a little muriatic acid into a wide-mouthed bottle of twice the capacity. Set this out of doors, on account of the odour, and add zinc cut in strips, so long as any is dissolved. In soldering copper, brass or iron, scrape the spot bright, place upon it a drop or two of this liquid, and apply solder in the usual manner.

A NEW SILVERING PROCESS FOR IRON AND STEEL.

De Villers has invented a metallic alloy for silvering. It consists of 80 parts of tin, 18 parts of lead, and 2 parts of silver, or 90 parts of tin, 9 parts of lead, and 1 part of silver.

The tin is melted first, and when the bath is of a brilliant white the lead is added in grains, and the mixture stirred with a stick of pine wood, the partially melted silver is added, and the mixture stirred again. The fire is then increased for a little while, until the surface of the bath assumes a light yellow colour, when it is thoroughly stirred up and the alloy cast in bars.

Whenever there is a choice between iron and steel, in making any article, the best quality of steel is to be preferred. The operation is then carried out in the following manner:—

The article, a knife blade for example, is dipped in a solution of hydrochloric or sulphuric acid (from 1 to 10 parts of acid in 100 parts of water). After taking it out of this pickle it is immediately rinsed with clean water, then dried and rubbed with a piece of soft leather or dry sponge, and finally exposed to a heat of 70° or 80° C. (158° to 176° Fahr.), for five minutes in a muffle. The object of this is to prepare the iron or steel to receive the alloy, by making the surface porous or covered with small microscopic holes. If the iron is not very good these holes are much larger, and frequently flaws and bad places are disclosed, which make the silvering more difficult. With steel the process goes on very regularly.

The article is warmed to 122° or 140° Fahr., and dipped in the bath of the above described alloy, which is melted by a gentle fire of graphite or refractory clay. The bath must be perfectly fluid, and is stirred with a stick of pine or poplar; the surface of the bath must have a fine white silver colour. Under these circumstances the object thus prepared quickly takes up the alloy, which penetrates the porous surface. For a knife blade an immersion of one or two minutes is sufficient to cover it; larger articles require five minutes' immersion. After taking it out of the bath it is dipped in cold water, or treated in such a way as to temper it, if tempering is necessary. If it is left too long in cold water it frequently becomes brittle, but this evil can be avoided by a little experience. It is then only necessary to rub it off dry and polish without heating it.

Articles treated in this manner look like silver and ring like it too, and withstand the oxidizing action of the air. To protect them from the effect of acid liquids like vinegar, they are dipped in a bath of amalgam, composed of 60 parts mercury, 39 parts of tin, and 1 part of silver. It is then dipped warm into melted silver, or electroplated with silver to give it the silvery look. The method of polishing will depend on the shape of the object. This kind of silvering is said to be very durable, and even resists gentle filing. The cost of the process is comparatively small. If this method is as good as the inventor represents it in the *Machine Builder*, this kind of plating will be preferred to nickel plating.

COLOURING CEMENTS.

The pigments employed to colour hydraulic and other cements, and obtain the shades common in trade, are the following:—

For Black, Pyrolusite	12 per cent.
Red, Caput Mortuum	6 ,,
Green, Ultramarine Green	6 ,,
Blue, Ultramarine Blue	5 ,,
Yellow Brown } Ochre	6 ,,

The strength of the cement is rather increased by the addition of ultramarine pigments, but somewhat diminished by the others. The ill effects of the latter may be somewhat removed by grinding the cement again after the pigment has been added, whereby it gains in fineness, and the strength is so much increased that no difference is observable between this and the ordinary cement. The black and red cements made in Dyckerhoff's works for making tiles and artificial stone show a strength by normal tests after twenty-four hours' drying of 20 kilos per square centimeter, or about 275 lbs. per square inch—a very respectable strain for such work.

TO REMOVE GILDING FROM OLD CHINA.

The following method is recommended for removing the remains of gilding from old china: Take soft water 8 parts by measure; nitric acid, 8 parts; common salt, 4 parts; sal-ammoniac, 1 part. Let it boil, put the china into it, and rub with a stiff brush.

GRECIAN GILDING.

Dissolve equal parts of sal-ammoniac and corrosive sublimate in nitric acid, and a solution of gold is to be made with the above mixture as a solvent; after slight concentration, the liquid is applied to the surface of silver, which immediately becomes black, but on being heated exhibits a rich gilded surface.

GOLD LACQUER.

Ground Turmeric	1	pound.
Ground Gamboge	1½	ounce.
Ground Gum Sandarach	3	pounds.
Ground Bleached Lac	1	,,
Alcohol	2	gallons.
Turpentine Varnish	3	pints.

Put the whole in a suitable vessel, cork close, and agitate until dissolved.

GOLD LUSTRE FOR STONEWARE.

Gold	6	parts.
Aqua Regia	30	,,

Dissolve; then add—

Tin	1	,,
Balsam of Sulphur	3	,,
Oil of Turpentine	1	,,

Mix gradually in a mortar and rub it until the mixture becomes hard, then add oil of turpentine 4 parts.

LIQUID CARMINE.

Carmine	2	parts.
Ammonia	3	,,
Water	20	,,

Dissolve.

TURKISH CEMENT.

1. "The jewellers of Turkey, who are mostly Armenians (we are informed by the most respectable and intelligent traveller, Mr. Eton, formerly a consul in that country, and author of a Survey of the Turkish Empire), have a singular method of ornamenting watch cases, etc., with diamonds and other precious stones, by simply glueing or cementing them on. The stone is set in silver or gold, and the lower part of the metal made flat, or to correspond with the part to which it is to be fixed; it is then warmed gently, and has the glue applied, which is so very strong, that the parts thus cemented never separate; this glue, which will strongly unite bits of glass, and even polished steel, and may of course be applied to a vast variety of useful purposes, is thus made:—

"Dissolve five or six bits of gum mastic, each the size of a large pea, in as much spirits of wine as will suffice to render it liquid, and, in another vessel, dissolve as much isinglass, previously a little softened in water (though none of the water must be used), in French brandy or good rum, as will make a 2-ounce phial of very strong glue, adding two small bits of gum galbanum or ammoniacum, which must be rubbed or ground till they are dissolved. Then mix the whole with a sufficient heat. Keep the glue in a phial closely stopped, and when it is to be used, set the phial in boiling water. Mr. Eton observes, that some persons have sold a composition under the name of Armenian cement, in England; but this composition is badly made; it is much too thin, and the quanity of mastic is much too small."

2. Thick isinglass glue, 1 part; thick mastic varnish, 1 part. Melt the glue, mix, and keep it in a closely corked phial. For use, put the phial in hot water.

TO MAKE COPPER INTO A METAL LIKE GOLD.

Distilled verdigris, 4 ozs.; tutiæ Alexandrinæ præpartæ, 2 ozs.; saltpetre, 1 oz.; borax, ½ oz.; mix all together with oil, till they be as thick pap; then melt it in a crucible, and pour it into a fire shovel, first well warmed.

TO MAKE TRANSPARENT SILVER.

Refined silver, 1 oz.; dissolve it in 2 ozs. of aqua fortis; precipitate it with a pugil (a quantity that may be taken up between thumb and finger) of salt, then strain it through a paper, and the remainder melt in a crucible for about ½ hour, and pour it out, and it will be transparent.

TO WHITEN COPPER THROUGHOUT.

Take thin plates of copper, as thin as a knife, heat them six or seven times, and quench them in water; then melt them, and to each pound add 4 ozs. of saltpetre and 4 ozs. of arsenic, well powdered and mixed, and first melted apart in another crucible, by gentle degrees; then take them out, and powder them; then take Venetian borax and white tartar, of each an ounce and a half; then melt these, with the former powder, in a crucible, and pour them out into some iron receiver; it will appear as clear as crystal, and is called *crystallinum fixum arsenicum*. Of this clear matter, broken into little pieces, throw into the melted copper (by small pieces at a time, staying five or six minutes between each injection) 4 ozs.; when all is thrown in, increase the fire, till all be well melted together for a quarter of an hour; then pour it out into an ingot.

SILVER-PLATING FLUID.

Dissolve 1 oz. nitrate of silver (crystal) in 12 ozs. of soft water; then dissolve in the water 2 ozs. cyanide of potassium; shake the whole together, and let stand till it becomes clear. Have ready some phials of the size wanted (½ oz. makes a good size) and fill half full of Paris white or fine whiting, and then fill up the bottles with the liquor, and it is ready for use. Thoroughly cleanse the article from all grease and dirt and apply with soft rag or flannel; polish with chamois skin.

TO GILD STEEL.

Pour some of the ethereal solution of gold into a wine glass, and dip into it the blade of a new penknife, lancet or razor; withdraw the instrument, and allow the ether to evaporate; the blade will then be covered with a beautiful coat of gold. The blade may be moistened with a clean rag, or a small piece of very dry sponge dipped into the ether, and the same effect will be produced.

ELKINGTON'S PATENT GILDING LIQUID.

Fine gold, 5 ozs. (troy); nitrate muriatic acid, 52 ozs. (avoirdupois); dissolve by heat, and continue the heat until red or yellow vapours cease to be evolved; decant the clear liquid into a suitable vessel; add distilled water 4 gals.; pure bicarbonate of potassa, 20 lbs.; and boil for 2 hours. The nitro-muriatic acid is made with pure nitric acid, 21 ozs.; pure muriatic acid, 17 ozs., and distilled water, 14 ozs.

GOLD ALLOYS.

The new standard for watch cases, etc., is 18 carats of fine gold and 6 of alloy. No gold of inferior quality can receive the "Hall mark," and gold of lower quality is generally described by its commercial value. The alloy may be entirely silver, which gives a green colour, or entirely copper for a red colour, but the copper and silver are more usually mixed in one alloy, according to the taste of the jeweller. It will be understood that these are made with fine gold, fine silver and fine copper, direct from the refiner.

GILDING METALS.

Gilding metals for common jewellery is made by taking—

Copper	4 parts.
Calamine Brass	1 ,,

DENTIST'S PLATE.

No. 1 gold, 20 dwts.; silver, 1 dwt.; copper, 2 dwts.
No. 2 gold, 21 dwts.; silver, 2 dwts.; copper, 3 dwts.

WERNICKE'S METHOD OF GILDING GLASS.

The following are the ingredients required:—1. Solution of gold. Pure gold, free from silver, is dissolved in aqua regia, the solution evaporated, and the residue taken up with water, so that 1 gill contains 15·4 grs. of gold. 2. Solution of sodic hydrate of 1·06 specific gravity. 3. Reducing liquid. 771½ grs. sulphuric acid, 617 grs. alcohol, 539 grs. water, and 770 grs. powdered manganic peroxide are distilled into 770 grs. of water until the bulk of the latter is doubled—154 grs. cane sugar, inverted by dissolving in $\frac{6}{10}$ gill of water, and boiling with 7½ grains nitric acid. The distilled liquid, the inverted sugar, and $\frac{84}{100}$ gill alcohol are mixed together and the mixture diluted to $1\frac{1}{10}$ pint. In using these solutions, 1 volume of the sodic hydrate solution is mixed with 4 volumes of the gold solution, and to this mixture is added from 1·35 to 1·30 volumes of the reducing liquid. The object to be gilded is placed on the top of the solution, having the surface intended to be coated turned downwards. The temperature of the bath should be below 140 degrees Fahrenheit.

FOR CLEANING COPPER.

Paris White	1 pound.
Carb. Magnesia	2 drachms.
Cyanuret Potassa	7 ,,
Sulph. Ether	3 ,,
Crocus Martis	1 ,,
Soft Water	1½ pint.

Mix all together, by rubbing, adding the Paris white last. Apply with a sponge or a rag, and polish dry with chamois skin or canton flannel.

May be used for cleaning silver also.

TO FROST POLISHED SILVER GOODS.

Cyanide of Potassium	1 ounce.
Water	½ pint.

Dissolve. Do not hold the silver in your hands, but use pliers made of lance-wood or box-wood, and apply the mixture with a brush to the polished surface.

A GOLD SOLUTION.

Gold Amalgam	½ ounce.
Nitric Acid	1 ,,
Muriatic Acid	2 ,,
Dissolve, and add Alcohol	2 ,,

Having brightened the article to be plated in the usual way, apply the above solution with a soft brush. Rinse and dry in sawdust, or with tissue paper, and polish with chamois skin.

A SILVER SOLUTION.

Nitrate of Silver	1 ounce.
Nitric Acid	1 ,,

Dissolve by the aid of heat, put some pieces of copper into the solution to precipitate the silver; wash the acid out in the usual way, then with 15 grs. of it mix 2 drachms of table salt, and ½ drachm of pulverised alum. Brighten the article to be plated with lye and prepared chalk, and rub on the mixture. When it has assumed a white appearance, expose to heat, as in the case of plating with gold amalgam, then polish up with the burnisher or soft leather.

HARMSTADT'S FINE IMITATION OF GOLD.

Platinum	16 parts.
Copper	7 ,,
Zinc	1 ,,

Put in a crucible, cover with charcoal powder, and melt into a mass.

It is said that this metal not only looks like gold, but has the same specific gravity and ductility.

IMITATION SILVER.

Copper	¼ ounce.
Brass	2 ,,
Pure Silver	3 ,,
Bismuth	2 ,,
Saltpetre	2 ,,
Common Salt	1 ,,
Arsenic	1 ,,
Potash	1 ,,

Melt in a crucible with powdered charcoal. This compound, used by a German chemist for unlawful purposes, was so perfect that he was never discovered.

ENAMELLING METAL.

The use of coloured enamels on large surfaces is yet in its infancy. The ordinary grey enamel (so called), is really not enamel, but a transpárent glaze, the apparent grey colour of which is produced by the surface of iron beneath the glaze.

GREY MIXTURE ENAMEL.

	Pounds.	Ounces.
Sand	10	0
Red Lead	33	0
Boracic Acid	20	0
Cullett (broken glass)	114	0
Bicarbonate of Soda	16	0
Nitre	1	2
Manganese	0	8½

WHITE MIXTURE ENAMEL.

	Pounds.	Ounces.
Cullett	11	0
Boracic Acid	7	0
Bicarbonate of Soda	0	4
Phosphate of Lime	0	8
Oxide of Antimony	0	2

BRONZING.

Bronze for all kinds of metals:—

Muriate of Ammonia	4 drachms.
Oxalic Acid	1 ,,
Vinegar	1 pint.

Dissolve the oxalic acid first. Let the work be clean. Put on the bronze with a brush; repeat the operation as many times as may be necessary.

BRONZE, TO GIVE AN ANTIQUE APPEARANCE.

Salt of Sorrel	1 ounce.
Sal ammoniac	2 ,,
White Vinegar	14 ,,

BRONZE (IMITATION OF).

The article is painted or stained in the dark green colour natural to bronze, giving two or three coats, as may be necessary; and then, before the last coat is dry, the parts intended to look bright are sprinkled with bronze powder, which may be bought at paint shops. Among the trade the powder goes by the name of "tacky." It is made by grinding Dutch foil and mosaic gold together, and a species of copper dust is used for the same purpose.

METHOD OF APPLYING THE BRONZE.

Go over the part you intend to bronze with gold size or varnish; when it is sufficiently dry—that is, when it does not adhere to the finger, but feels clammy—dip a piece of it in cotton, rolled into a hard ball, in your bronze powder, and dab it on to the place to be bronzed.

BRONZE POWDER—A BEAUTIFUL RED.

Mix together

Sulphate of Copper	100 parts.
Carbonate of Soda	60 ,,

Apply heat until they unite into a mass, then cool, powder, and add copper filings, 15 parts; mix well, and keep them at a white heat for twenty minutes; then cool, powder, and wash and dry.

GOLD-COLOURED.

Verdigris	8 ounces.
Putty Powder	4 ,,
Borax and Nitre, each	2 ,,
Bichloride of Mercury	¼ ,,

Make them into a paste with oil, and fuse them together. Used in japanning as a gold colour.

IRON-COLOURED.

Plumbago finely powdered.

SILVER WHITE.

Melt together 1 oz. each of bismuth and tin, then add 1 oz. of running quicksilver; cool and powder.

Gold-leaf, or alloy of gold, reduced to powder by grinding them with sulphate of potash, or with honey, and washing away the extraneous matter with hot water, and drying the metallic powder.

Dutch metal, and other similar alloys, treated in the same way.

Verdigris	4 ounces.
Tutty	2 ,,
Sublimate	8 drachms.
Borax	1 ,,
Nitre	1 ,,

Mix them into a paste with oil, and fuse the mixture in a crucible. This has failed in some hands—perhaps, from the tutty being factitious.

Mix together 100 parts of sulphate of copper, and 50 of crystallised carbonate of soda; apply heat till they unite. Powder the mass when cold, add 15 parts of copper; mix well, and keep it at a white heat for twenty minutes. Wash and dry the product.

BRONZING WOOD.

First coat the clean wood with a mixture of size and lampblack; then apply two coats of the green-coloured sizing in the last recipe; and, lastly, with bronze powder, such as powdered Dutch foil, mosaic gold, etc., laid on with a brush. Finish with a thin solution of Castile soap; and, when dry, rub it with a soft woollen cloth.

DYEING RECIPES.

PANSY FOR SILK GARMENTS (17¼ oz.).

Dye at 167° Fahrenheit.

Having first washed the articles well, in a beck of ½ oz. curd soap and solution of aniline violet, more or less, according to shade.

LIGHT BROWN OR SILK GARMENTS (17¼ oz.).

Wash for fifteen minutes in a clear beck made up with 1¾ oz. genuine certch; lift and enter in a fresh beck at the same heat, with ¾ oz. chromate of potash, and work in this for ¼ hour; rinse and dye up at 167° Fahrenheit, with a little vesuvin and magenta. Vesuvin should predominate for yellowish tones, and magenta for red ones.

DYEING.

1. Pour a little solution of indigo in sulphuric acid into a glass of water, and add about an equal quantity of solution of carbonate of potash. If a piece of white cloth be dipped in this mixture, it will come out a blue. If a piece of yellow cloth be dipped in, it will become a green, or a red will be converted to a purple. A slip of blue litmus paper immersed in it will immediately become red.

2. If a little fustic, quercitron bark, or other dye, be boiled in water, the colouring matter will be extracted, and a coloured solution formed. On adding a small quantity of dissolved alum to this decoction, the alumina or base of the salt, will attract the colouring matter, forming an insoluble compound, which in a short time will subside, and may easily be separated.

3. Boil a little cochineal in water, with a grain or two of cream of tartar (supertartrate of potash), and a dull kind of crimson will be formed. By the addition of a few drops of nitro-muriate of tin, the colouring matter will be precipitated of a beautiful scarlet. This, and some of the former instances, will give a tolerably correct idea of the general process of dyeing woollen cloths.

4. If a few strips of dyed linen cloth, of different colours, be dipped into a phial of oxymuriatic acid, the colours will be quickly discharged; for there are few colours that can resist the energetic effect of this acid. This experiment may be considered as a complete example of the process of bleaching coloured goods.

5. Having found a piece of blue linen cloth, that will bleach in oxygenised muriatic acid, dip the tip of the finger in a solution of muriate of tin, and press it while wet with the solution, upon a strip of this cloth. After an interval of a few minutes immerse the cloth in a phial of liquid oxymuriatic acid, and when it has remained in it the usual time, it will be found that the spot which was previously wet with muriate of tin, has preserved its original colour, while the rest of the cloth has become white.

6. Dip a piece of white calico in a strong solution of acetate of iron; dry it before the fire, and lay it aside for three or four days. After this, wash it well in hot water, and then dye it black by boiling it for ten minutes in a strong decoction of Brazil wood. If the cloth be now dried, any figures printed upon it with a colourless solution of muriate of tin, will appear of a beautiful scarlet, although the ground will remain a permanent black.

7. Dissolve 4 drachms of sulphate of iron in 1 pint of cold water, then add about 6 drachms of lime in powder, and 2 drachms of finely pulverised indigo, stirring the mixture occasionally for twelve or fourteen hours. If a piece of white calico be immersed in this solution for a few minutes, it will be dyed green; and by exposure to the atmosphere only for a few seconds, this will be converted to a permanent blue.

8. If a piece of calico be immersed in a solution of sulphate of iron, and when dry washed in a weak solution of carbonate potash, a permanent colour will be produced, viz., the buff of the calico-printers.

9. Boil equal parts of annatto and common potash in water till the whole are dissolved. This will produce the pale reddish-buff so much in use, and sold under the name of nankeen-dye.

10. If muriate of tin, newly made, be added to a solution of indigo in sulphuric acid, the oxygen of the indigo will be absorbed, and the solution instantly converted to a green. It is on the same principle that muriate of tin is employed in cleansing discoloured leather furniture; as it absorbs the oxygen, and the leather is restored to its natural colour.

11. Take a piece of dark olive-coloured linen that has been dyed with iron and quercitron bark, or weld, and spot it in several places with a colourless solution of muriate of tin. Wherever the cloth has been touched with this solution, the original colour will be discharged, and spots of a bright yellow will appear in its stead.

12. Dip a piece of white calico in a cold solution of sulphate of iron, and suffer it to become entirely dry. Then imprint any figures upon it with a cold solution of colourless citric acid, and allow this also to dry. If the piece be then well washed in pure warm water, and afterwards boiled in a decoction of logwood, the ground will be dyed either a slate or black colour, according to the strength of the metallic solution, while the printed figures will remain beautifully white. This experiment is designed to show the effects of acids in discharging vegetable colours.

13. If lemon-juice be dropped upon any kind of buff colour, the dye will be instantly discharged. The application of this acid by means of the black, is another method by which calico-printing gives the white spots or figures to piece goods. The crystallised is generally used for this purpose.

These thirteen experiments will give some idea of the nature of calico-printing.

TO DYE SILK A SALMON COLOUR.

The process is similar to that given for flesh colour, except that the goods must be passed through diluted muriate of tin.

TO DYE SILK, WOOL, OR WORSTED A BEAUTIFUL MAUVE.

Water	1 gallon.
Sulphuric Acid	½ ounce.

Mix and heat to boiling point.

For a very light mauve, add 1 teaspoonful imperial violet liquor; boil the same amount of material as stated under Magenta, about ten minutes. Rinse in cold water. If the colour be too deep, use a little soap in rinsing, using warm water.

TO DYE SILK, WORSTED, OR COTTON A PLUM COLOUR.

Water	1 gallon.
Sulphuric Acid	1 drachm.
Glauber Salts in Crystals . .	1 ounce.
Violet Liquor	4 drachms.
Magenta Liquor	2 ,,

Boil the articles about ten minutes.

CRIMSON FOR WORSTED OR WOOL.

Water	3 gallons.
Paste Cochineal	1 ounce.
Cream of Tartar	1 ,,
Nitrate of Tin	4 drachms.

Boil the goods in this one hour. Wash first in cold water, then in another vessel with 3 gallons warm water with a cupful of ammonia, the whole well mixed. Put in the goods, and work well for fifteen minutes. For a blue shade, add more ammonia. Then wash out.

TO DYE SILK A FLESH COLOUR.

Boiling Water	1 gallon.
White Soap	1 ounce.
Pearlash	1 ,,

Mix well, then add

Annatto Liquor	½ ,,

Put the silk through several times, and proportion the liquor till you obtain the required shade.

BLACK DYE FOR WORSTED OR WOOLLEN.

Bichromate of Potash . . .	¾ ounce.
Water	3 gallons.

Dissolve the bichromate of potash in the water, and boil the goods in this forty minutes, and wash out in cold water; then take

Water	3 gallons.
Logwood	9 ounces.
Fustic	3 ,,
Double Oil of Vitriol . . .	2 drops.

Boil the goods forty minutes, wash out in cold water. This will dye from 1 to 2 lbs. of cloth, or a lady's dress, if of a dark colour or brown, claret, etc.

IMPERIAL BLUE FOR SILK, WOOL, AND WORSTED.

Water	1 gallon.
Sulphuric Acid	$\frac{1}{2}$ ounce.
Imperial Blue	4 drachms.

Mix. Immerse the silk, worsted, or wool, and boil ten minutes; wash in a weak solution of soap lather.

LOGWOOD AND INDIGO BLUE DYE FOR CLOTH.

Take 100 lbs. of cloth and colour it by first dipping it in the vat of indigo blue a couple of times, rinse it well, and boil in the following solution:—

Alum	20 lbs.
Half-refined Tartar	2 ,,
Mordant	5 ,,

Boil for two hours. Take out and cool off to 170° Fahr. before entering; handle well over a reel, let it boil for half an hour, then take it out; cool and rinse. This is a very fine blue.

TO FIX DYES.

Gelatine	20 ounces.
Bichromate of Potash	3 ,,

Dissolve the gelatine in water before adding the potash. The work is done in a dark room. The colouring matter is next added, and the goods submitted thereto; after which they are exposed to the action of light; the pigment thus becomes insoluble in the water, and the colour is fast.

SCARLET DYE WITH COCHINEAL.

Cream of Tartar	25 ounces.
Cochineal, pulverised	$12\frac{1}{2}$,,
Muriate of Tin or Scarlet Spirit	8 pounds.

Boil the dye, enter the goods, work them well for 15 minutes, then boil them $1\frac{1}{2}$ hour, slowly agitating the goods while boiling, wash in clean water, and dry out of the sun.

The above is calculated for 50 lbs. of wool yarn.

TO DYE A LIGHT SILVER DRAB.

For 50 lbs. of goods use logwood $\frac{1}{2}$ lb., alum $\frac{1}{2}$ lb.; boil well, enter the goods and dip them for 1 hour. Grade the colour to any desired shade by using equal parts of logwood and alum.

CHROME BLACK FOR WOOL.

For 40 lbs. of goods use blue vitriol 3 lbs., boil it a short time, then dip the wool or fabric three-quarters of an hour, airing frequently; take out the goods, and make a dye with logwood, 24 lbs.; boil one-half hour, dip three-quarters of an hour, air the goods, and dip one-quarter of an hour longer; wash in strong soapsuds. A good fast colour.

TO DYE STRAW BONNETS.

Ground Saunders	$1\frac{1}{2}$ pound.
Ground Curcuma	2 ,,
Powdered Nut Galls	$\frac{3}{4}$,,
Logwood (rasped)	$\frac{1}{16}$,,

Boil the straw goods with the above in a large kettle (so as not to crowd) for 2 hours, then withdraw the hats, rinse, and let them remain overnight in a bath of nitrate of 4° Baume, when they are washed. The above preparation is sufficient for 25 bonnets.

ANILINE RED.

Enclose the aniline in a small muslin bag; have a kettle (tin or brass) filled with moderately hot water and rub the substance out. Then immerse the goods to be coloured, and in a short time they are done. It improves the colour to wring the goods out of strong soapsuds before putting them in the dye. This is a permanent colour on wool or silk.

TO DYE SILK, WOOL, OR WORSTED, MAGENTA COLOUR.

Water, 180° Fahr.	1 gallon.
Magenta Liquor	4 drachms.

Stir it up well.

The above dye may be intensified very easily by using more or less of the magenta liquor.

BROWN ON COTTON.

Catechu	1 pound.
Verdigris	4 ounces.
Sal-ammoniac	5 ,,

BROWN ON WOOL OR SILK.

Infusion or decoction of walnut-peels dyes wool and silk a brown colour, which is brightened by alum. Horse-chestnut peels also imparts a brown colour; a mordant of muriate of tin turns it on the bronze, and sugar of lead the reddish brown. Take three times through an old soda beck. Rinse when the dyeing is complete.

BILLIARD GREEN ON CLOTH (110 lbs.).

Dissolve in water—

Alum	16 lbs. 6 ozs.

Boil in it

Fustic	22 lbs.

And add

Extract of Indigo	5 lbs. 7 ozs.

The colour most in favour at the present time is caroubier, which seems to combine the red-cardinal and yellow-brown. It is easily obtained on wool in a bath of fuchsine, with the addition of a very small quantity of aniline maroon, or by a mixture of orchil with redwood, and a little fustic added, it is easy to produce this shade.

Eoxine is now being largely substituted for cochineal in the dyeing of wool. A beautiful bright scarlet may be obtained by using the following: To 10 lbs. of wool, 3 ozs. of eoxine and 8 ozs. of alum; take through cold water, and work for 30 minutes in a beck of

Sumac	$3\frac{1}{4}$ pounds.

At 190° Fahr.; then dye in a cold beck with

Magenta	$1\frac{3}{4}$ ounce.

Take out, add to the beck

Alum	8¾ ounces.

And the decoction of

Logwood	2¼ pounds.

Enter again, work in a cold beck; lift, and add, according to shade, from ⅓ to 1¾ oz. chromate of potash; re-enter, and work. The colour is now complete.

FAST BLACK ON WOOLLEN (11 lbs.).

Boil for 1 hour with—

Chromate of Potash	4½ ounces.
Prepared Tartar	4½ „

Finely ground; rinse immediately, and let cool in the liquor, and dye with

Logwood	6½ pounds.

Adding a little fustic, according to shade, and

Logwood	7 ounces.

Boil for ¾ hour. After dyeing, drain, and take the yarns four times through the prepared beck; rinse, and then

Lime	17¼ ounces.

Rinse slightly, and work in a cold beck of

Chromate of Potash	17¼ „
Sulphuric Acid	17¼ „

For ¼ hour. Redden in a boiled beck with

Lime	8¾ ounces.

Working for 3 minutes, and rinsing. If a redder shade is required, top in fresh cold water, with

Magenta	⅓ ounce.

ROSE ON LINEN (11 lbs.).

Work in a boiling hot beck of

Tannin	7 ounces.
Curd Soap	3½ „

Add to the water the solution of

Tin Crystals	3½ ounces.

And dye with ⅓ to ¾ oz. saffranine, at 110° Fahr.

CLARET ON COTTON YARNS (11 lbs.).

Make up a beck with

Prepared Catechu	17¼ ounces.

And work the prepared yarn in it for 1 hour. Wring and steep for half an hour in a hot beck of

Chromate Potash	6¼ „

DARK CANNELLE.

For 100 lbs. bleached cotton—

Catechu	15 pounds.
Blue Vitriol	6 „
Bichromate	1 „

Work as in Yellow Cannelle, and finish in a boiling bath of

Sal Soda	4 pounds.

GOLD YELLOW ON LINEN (11 lbs.).

Steep for 3 hours in a boiling beck of

Tannin	17¼ ounces.

And dye in a fresh cold beck with

Aniline Orange	3½ „

Otherwise known as Phospine.

CARMELITE OLIVE.

For 100 lbs. bleached cotton—

Catechu	15 pounds.
Blue Vitriol	4 „
Bichromate	1 „

Work same as for Yellow Cannelle, and finish with

Quercitron	10 pounds.
Pyrolignite of Iron	1 goblet.

TETE DE NEGRE.

For 100 lbs. bleached cotton—

Catechu	5 pounds.
Alum	2 „
Blue Vitriol	1 „
Bichromate	2 „

Work as in Yellow Cannelle, and finish with

Red Saunders	40 pounds.
Pyrolignite of Iron	1 goblet.

For each 25 lbs. of cotton.

No regularity in the change of pitch of the saturated gypsum bars, in comparison with the dry bars, is here recognisable. A comparison of the condition of each bar, when it has taken up liquid, shows a change of the modus of elasticity to a certain degree, which is only different for different liquids set over against each other.

YELLOW CANNELLE.

For 100 lbs. bleached cotton—

Catechu	10 pounds.
Blue vitriol	4 „
Bichromate	½ „

Pass through the catechu, and wring; then pass through the bichromate, and wash. Repeat the passes, and wash. Finish with

Quercitron bark	10 pounds.

PONCEAU ON COTTON YARN (11 lbs.).

Boil for one hour with 8¾ ozs. curd soap; take out and enter in a boiling beck of 1 lb. 10 ozs. annatto, and 10½ ozs. soda crystals. Here let it remain for 6 hours. Take out and enter in a beck of bichloride of tin at 3° Baume, where it is left for three hours with frequent turning. It is then taken through water and dyed at 167° Fahrenheit with the clear solution of 6¼ ozs. saffranin.

FAST GREEN ON WOOL (219 lbs.).

Prepare at a boil for 90 minutes with 19½ lbs. of sulphate of alumina (cake alum), 4 lbs. 14 ozs. of chromate of potash, the same weight of sulphuric acid, and 1 lb. 10 ozs. tin crystals. Then boil up in the dye pan 1 lb. 1½ oz. sulphate of alumina, and remove scum if needful; add 46 lbs. "chemic" (some extract of indigo), 18 ozs. French extract of fustic, and 17¼ ozs. salt. Boil for 1½ to 2 hours. The chemic is prepared with 6 lbs. 9 ozs. indigo, and 26 lbs. 4 ozs. fuming sulphuric acid; diluting with 44 lbs. water, after standing for 24 hours.

GOLDEN OLIVE ON WOOL.

Boil for 90 minutes with 6 lbs. 9 ozs. chromate of potash, 3 lbs. 4½ ozs. blue vitriol, and 1 lb. 10 ozs. sulphuric acid; then dye with 12 lbs. French extract of fustic, 17¼ ozs. French extract of logwood, 6 lbs. 9 ozs. saunders and the same weight of madder; boil for 75 minutes, sadden with 1 lb. 10 ozs. copperas, and boil 30 minutes longer.

PANSY ON SHODDY.

Prepare with 2 lbs. 3 ozs. chrome alum, 2 lbs. 3 ozs. sulphuric acid, and ¾ oz. chloride of tin. Then dry to shade with aniline violet (soluble in alcohol).

GREEN FOR HALF WOOLLEN GARMENTS (11 lbs.).

Make up a beck with 17¼ ozs. alum, 8¾ ozs. argol, 17¼ ozs. fustic, and 3½ ozs. extract of indigo. Boil the goods in this for an hour; rinse. Prepare with ¾ lb. sumac; wring out and top in a fresh cold beck, with 1¾ oz. methyl-green.

MODE ON JUTE (11 lbs.).

Boil out 17¼ ozs. prepared catechu. Pour the solution into water at 100° Fahrenheit, and dissolve therein 1¾ oz. blue vitriol. Wet out the jute in water at 100° Fahr., enter in the catechu beck, and work for half an hour. Take out, and add the solution of 1¾ oz. chromate of potash. Re-enter, work to shade, rinse and dry.

GREY ON JUTE (11 lbs.).

Boil 17¼ ozs. sumac in water, and steep the jute for an hour in the liquid. Take out, dissolve 17¼ ozs. of copperas. Enter the goods, and dry to shade. If a blue grey is required, make up a fresh beck at 77°, with the solution of 17¼ ozs. alum, and ⅜ oz. extract of indigo, and a very little solution of magenta; enter the goods and dry to shade

DRESSINGS FOR WHITE SHIRTINGS.

For 175 pints of dressing, take 11 lbs. of wheat starch, 2 lbs. 3 ozs. stearine, and 6 lbs. 9 ozs. China clay. Boil up together, and apply hot, and dry on the cylinder.

PANSY ON JUTE (11 lbs.).

Wet out perfectly in water at 100° Fahrenheit; lift and add ½ oz., or a little more, according to shade of soluble violet, previously dissolved and filtered. Enter, give 5 turns, and dry. Re-enter, give 5 turns, and dry.

CRIMSON ON JUTE (11 lbs.).

Wet out as before, and dry with 1¼ oz. to ½ oz. of magenta.

BISMARCK ON JUTE (11 lbs.).

Wet out and dry with ½ oz. to 1 oz. vesuvin.

BLUE ON SILK GARMENTS (17¼ ozs.).

Wash and work for a quarter of an hour in a boiling kettle, ⅛ oz. Nicholson blue and 3⅛ ozs. borax. Lift, drain, and take through a cold beck of 3½ ozs. of sulphuric acid.

SILVER GREY ON SILK GARMENTS (17¼ ozs.).

Make up the kettle with 3⅛ ozs. orchil, 1 oz. turmeric, 1 oz. sulphuric acid, ¾ oz. violet lake, and ⅛ oz. magenta, and dye at a boil.

BROWN OR WOOLLEN PIECE GOODS.

Boil for one hour with 2 lbs. 3 ozs. chromate of potash, and the same weight of argol. Let cool in the flot, and dye at a boil for one hour, with 44 lbs. of fustic, 11 lbs. madder, and 11 lbs. of camwood. Take out, and dissolve in the beck, 2 lbs. 3 ozs. copperas, and 17¼ ozs. blue vitriol. Re-enter, and boil for an hour longer.

TO COMPUTE THE WEIGHT OF COPPER.

Rule.—Ascertain the number of cubic inches in the piece, and multiply them by ·32118, and the product will give the weight in pounds.

Example.—What is the weight of a copper plate ½ inch thick by 16 inches square? Proceed thus:

$$16 + 16 = 256 + \tfrac{1}{2} = 128$$

$$\text{Then, } 126 \times {\cdot}32118 = 41{\cdot}11104 \text{ pounds.}$$

TO COMPUTE THE WEIGHT OF LEAD.

Ascertain the number of cubic inches in the piece; multiply the sum by ·41015, and the product will give the weight in pounds.

Example.—What is the weight of a leaden pipe 12 feet long, 3¾ inches in diameter, and 1 inch thick.

Proceed thus: We first find the area of a cylindrical ring by the general rule, as follows: To the thickness of the ring add the inner diameter; multiply this sum by the thickness, and the product by 9·8696.

$$\begin{array}{lrl} \text{Area of } (3{\cdot}75 + 1 + 1) & = 25{\cdot}967 & \\ \text{Area of } 3{\cdot}75 & = 11{\cdot}044 & \\ \text{Difference,} & 14{\cdot}923 & \text{area of ring.} \\ & 144 & \\ & 2148{\cdot}912 & \end{array}$$

$$\text{Then } 2148{\cdot}912 \times {\cdot}41015 = 881{\cdot}376 \text{ pounds.}$$

TO COMPUTE THE WEIGHTS OF ORDINARY BRASS CASTINGS.

Rule.—Ascertain the number of cubic inches in the piece, multiply them by ·3112 and the product will give the weight in pounds.

TO TEST QUALITY OF STEEL.

Good tool steel with a white heat, will fall to pieces; with bright red heat will crumble under the hammer; with middling heat may be drawn to a needle point.

To test the hardening qualities, draw under a low heat to a gradually tapered square point, and plunge into cold water; if, when broken, the point will scratch glass, the quality is good.

TO TEST TENACITY.

A hardened piece may be drawn into cast iron by a hardened hammer, if poor it will crumble. Soft steel of good quality, gives a curved line fracture and uniform texture. Tool steel should be a dull silver colour, uniform and entirely free from sparkling qualities.

Aqua fortis applied to the surface of steel, produces a black spot; in iron, the metal remains clean. The slightest vein of iron or steel can be readily detected by this method.

MECHANICAL POWERS.

Power is a compound of weight or force and velocity. It cannot be increased by mechanical means.

The powers are three in number, namely, lever, inclined plane and pulley.

NOTE.—Some authors give six mechanical powers, namely, the lever, the pulley, the inclined plane, the wheel and axle, the wedge and the screw.

The wheel and axle is a continuous or revolving lever; the wedge, a double inclined plane, and the screw a revolving inclined plane.

Levers are bent, straight, curved, single or compound.

To compute the length of a lever, the weight and power being given.

Rule.—Divide the weight by the power, and the quotient is the difference of leverage, or the distance from the fulcrum, at which the power supports the weight.

Example.—A weight of 1,600 lbs. is to be raised by a power or force of 80 lbs.; required the length of the longest arm of the lever, the shortest being 1 foot. Proceed thus: 1,600 divided by 80, the force or power equals 20 feet. *Ans.*

To compute the weight that can be raised by a lever, its length, power and position of fulcrum being given.

Rule.—Multiply the power by its distance from the fulcrum, and divide the product by the distance of the weight from the fulcrum.

Example.—What weight can be raised by a power of 375 lbs. suspended from end of a lever 8 feet from the fulcrum, the distance of the weight from the fulcrum being 2 feet.

$375 \times 8 \div 2 = 1{,}500$ lbs. *Ans.*

To compute the position of the fulcrum, the weight and power and the length of the lever being given.

When the fulcrum is between the weight and the power.

Rule.—Divide the weight by the power, and add 1 to the quotient, and divide the length by the sum thus obtained.

Example.—A weight of 2,460 lbs. is to be raised with a lever 7 feet long and a power of 300 lbs at what part of the lever must the fulcrum be placed.

$2{,}460 \div 300 = 8{\cdot}2 + 1 = 9{\cdot}2$.

Then, $84\ (7 \times 12) \div 9 = 13{\cdot}13$ inches.

When the weight is between the fulcrum and the power.

Rule.—Divide the length by the quotient of weight divided by the power.

To compute the length of arm of the lever to which the weight is attached, the weight, power and length of arm of the lever to which the power is applied being given.

Rule.—Multiply the power by the length of the arm to which it is applied, and divide the product by the weight.

Example.—A weight of 1,600 lbs. suspended from the fulcrum of a lever is supported by a power of 80 lbs. applied at the other end of the arm, 20 feet in length; what is the length of the arm?

$80 \times 20 \div 1{,}600 = 1$ foot.

TO FIND THE REQUIRED DIAMETER OF A PULLEY FROM THE DIAMETER AND REVOLUTIONS OF A GIVEN PULLEY.

Suppose a pulley 48 inches in diameter to make 35 revolutions, find the diameter of another to make 20 revolutions in the same time. Proceed thus:—

Multiply 48 inches, diameter of wheel,
by 35, No. of revolutions.
Then, $48 \times 35 = 1680$.
Again, $1680 \div 20$, proposed number of revolutions, we have 84 inches.

Find the number of revolutions per minute made by a wheel or pulley 30 inches in diameter, when driven by another 60 inches in diameter, and making 54 revolutions in the same time.

Proceed thus:—

Multiply 60 inches, diameter of wheel,
by 54, No of revolutions.
Then, $60 \times 54 = 3240$.
Again, $3240 \div 30 = 108$.

TO COMPUTE THE POWER REQUIRED TO RAISE A GIVEN WEIGHT.

The length of the lever and the position of the fulcrum being given:—

Multiply the weight to be raised by its distance and divide the product by the distance of the power from the fulcrum.

Example.—The length of a lever is 10 feet, and the weight to be raised is 3,000 lbs.

Then, $3000 \times 2 \div 10 - 2 = 750$ lbs. *Ans.*

TO FIND THE LENGTH OF ARM OF A LEVER.

When weight, power and distance of the fulcrum is given:—

Rule.—Multiply the weight by its distance from the fulcrum and divide the product by the power.

Example.—A weight of 400 lbs., suspended 15 inches from the fulcrum, is supported by a power of 50 lbs. applied at the other; what is the length of the arm?

$400 \times 15 \div 50 = 120$ inches.

TO CLEAN A WATCH.

The best process is to simply blow your breath upon the plate or bridge to be cleaned, and then use your brush with a little prepared chalk.

The wheels and bridges should be held between the thumb and finger in a piece of soft paper while undergoing the process, otherwise the oil from the skin will prevent their becoming clean. The pinions may be cleaned by sinking them several times into a piece of pith, and holes by turning a nicely shaped piece of pivot wood into them; first dry and afterwards oil a very little with watch oil. When the holes pass through jewels you must work gently, to avoid breaking them.

TO CLEAN BY CHEMICAL PROCESS.

Some watchmakers employ what they call the chemical process to clean and remove discoloration. It is as follows: Remove the screws and the steel parts, then dampen with a solution of oxalic acid and water. Let it remain a few minutes, after which immerse in a solution made of ¼ lb. of cyanuret of potash to 1 gallon of water. Let it remain five minutes, then rinse with cold water, after which dry in sawdust or with a brush and prepared chalk, as suits your convenience.

TO MAKE RED WATCH HANDS.

Carmine	1 ounce.
Muriate of Silver	1 „
Tinner's Japan	½ „

Mix together in an earthen vessel, and hold over a spirit-lamp until formed into a paste. Apply this to the watch hand, and then lay it in a copper plate, face-side up, and heat the plate sufficiently to produce the colour desired.

MEDICAL DEPARTMENT.

RULES FOR PRESCRIBING MEDICINES.

We may sum up the rules as follows :—

1. Take note of the temperature and dryness of the skin.
2. Find whether the pulse beats slow or quick, weak or strong.
3. Inquire as to the state of the bowels and kidneys.
4. Inquire concerning the patient's appetite.
5. Examine the appearance of the tongue.
6. General appearance of the patient.
7. Size, whether thin or corpulent.
8. Expression.
9. Changes of colour of skin.
10. The position or posture.
11. If the patient is in bed, observe the position, manner of lying, whether on the back or side, quiet or restless.
12. If the patient is out of bed, observe his posture, gait, stiffness, loss of power of his limbs.
13. The sensations of the patient.

In prescribing a medicine the following circumstances should always be kept in view :—Age, Sex, Temperament, Habit, Climate, the Condition of the Stomach and Idiosyncrasy.

Sex.—Women require smaller doses than men. They are more rapidly affected by purgatives than men ; and the condition of the uterine system must never be overlooked.

Temperament.—Stimulants and purgatives more readily affect the sanguine than the phlegmatic, and consequently the former require smaller doses.

Habits.—The knowledge of habits is essential, for persons in the habitual use of stimulants and narcotics require larger doses to affect them when labouring under disease ; while those who have habituated themselves to the use of saline purgatives are more easily affected by these remedies. Persons, however, who have habituated themselves to the use of opium do not require larger doses than usual of other narcotics.

Climate.—Medicines act differently on the same individual in summer and in winter, and in different climates. Narcotics act more powerfully in hot than in cold climates; hence smaller doses are required in the former; but the reverse is the case with respect to calomel.

Condition of the Stomach and Idiosyncrasy.—The least active remedies operate very violently on some individuals, owing to a peculiarity of stomach, or rather disposition of body unconnected with temperament; this can be discovered by accident or time; but when it is known it should always be attended by the practitioner.

In prescribing, the practitioner should always so regulate the intervals between the doses that the next dose may be taken before the effect produced by the first is altogether effaced, for by not attending to this circumstance, the cure is always commenced, but never proceeded. Remember that the mercurial salts, arsenic, etc., are apt to accumulate in the system, and elaterium and digitalis continue their action long after the remedy is left off.

MEDICINES, WITH THEIR USES AND DOSES.

Medicine.	Common Name.	Operation.	Use.	Dose.
Absinthium	Wormwood	Anthelmintic, antiseptic, discutient.	Intermittents, dyspepsia and gout.	Infusion, 6 drms. to 1 pt. of water.
Acacia	Gum arabic	Demulcent	In whooping cough and catarrh.	½ to 2 drms.
Acetic ether		Stimulent and antispasmodic.	Used externally in rheumatism.	*Ad libitum.*
Acetum	Vinegar	Diaphoretic, astringent, etc.	In fevers and scorbutus	1 to 4 drms.
„ aromaticum	Arom. vinegar		As a grateful perfume in sick rooms.	*Ad libitum.*
„ cantharides	Vinegar of cantharides.	A prompt vesicant	As a counter-irritant in dropsy, to form an immediate blister.	6 to 16 drops, as a diuretic.
„ colchici	Vinegar of meadow saffron.	Diuretic and purgative	In dropsy and gout.	30 to 60 drops, in any bland fluid.
„ destillata	Distilled vinegar	Refrigerant, astringent	Chiefly for pharmaceutical purposes, same as vinegar	1 to 4 drms.
„ lobelia	Vinegar of lobelia	Antispasmodic	Emetic	30 to 60 drops.
„ opii	„ of opium	Narcotic	Substitute for tincture of opium.	8 to 10 drops.

Medicine.	Common Name.	Operation.	Use.	Dose.
Acetum sanguinariæ	Vinegar of bloodroot.	An acrid emetic, diaphoretic and stimulant.	In chronic catarrh, bronchial affections and pertussis.	15 to 30 drops.
„ scillæ	„ of squill	Diuretic, emetic, expectorant.	In dropsies, asthmas, and chronic catarrh.	15 to 60 drops, in cinnamon water, or mint water.
Achillea millefolum	Milfoil or yarrow	Diuretic	In hysteria, hemorrhages and periodical affections	Used in infusion, or 20 drops of volatile oil.
Acidum aceticum	Acetic acid	Stimulant, rubefacient, escharotic	Applied to the nostrils in syncope, headache, etc.	
„ nitricum	Nitric acid	Tonic, antiseptic, escharotic.	Commercial purposes	Not to be given internally.
„ „ dil.	„ „	. . . . .	As a drink largely diluted in fevers; in affections of the liver.	10 to 20 drops in 3 ozs. of water.
„ nitro muriaticum	Nitro muriatic acid.	Stimulant antiseptic	In scarlatina, in chronic affections of liver, epilepsy, etc.	6 to 10 drops in 3 ozs. water.
„ sulphuricum	Sulphuric acid	Tonic, stimulant, astringent, refrigerant.	In local pains and in scabies.	Not given internally.
„ „ aro.	Elixir of vitriol	Aromatic	In dyspepsia and chronic asthma.	10 to 30 drops in fluids twice a day.
„ „ dil.	Diluted sulphuric acid.	Tonic, astringent, refrigerant.	Skin eruptions, gargles, dyspepsia.	10 to 20 drops largely diluted.
„ sulphurosum	Sulphurous acid	Externally applied	In parasitic skin diseases, used in lotion.	Not used internally.
„ tannicum	Tannic acid, tannin.	Astringent	In passive hemorrhages in diarrhœa, menorrhagia.	2 to 4 grs.
„ tartaricum	Tartaric acid	Refrigerant, antiseptic	In inflammatory affections, fevers and scorbutus.	10 to 200 grs.
„ valerianicum	Valerianic acid	Inflammable, dissolves camphor and resins.	Antispasmodic nervine	5 to 15 drops.
Aconitina	Aconite	Narcotic	Used externally counter irritant, very poisonous.	Not given internally.
Aconiti folia et radix	„ napelus	Narcotic, sudorific, antiphlogistic.	In chronic rheumatism, scrofula, palsy, etc.	1 gr., gradually increased to 5.
Actæa	Baneberry, white and red cohosh.	Expectorant	Purgative and emetic	10 grs.
Acidum aceticum aromaticum.	Aromatic vinegar	Purgent	As a grateful perfume in sick rooms.	
Acidum aceticum camphoratum.	Camphorated acetic acid.	Aromatic	The vapour is snuffed up the nostrils in syncope.	
Acidum arseniosum	Arsenious acid	Tasteless	To prepare the arsenical solution.	$\frac{1}{30}$ of a gr.
„ benzoicum	Benzoic acid	Standard expectorant	In chronic catarrh	10 to 30 grs.
„ carbazoticum	Picric acid	Tonic astringent, antiperodic.	In intermittents, diarrhœa, etc.	2 to 5 grs.
„ carbolicum	Carbolic acid	A most complete disinfectant.	Use in surgery in arresting pus.	Make lotion 2 to 10 grs., to water 1 oz.
„ chromicum	Chromic acid	. . . . .	As an escharotic	Not given internally.
„ citricum	Citric acid	Refrigerant, antiseptic	In febrile and inflammatory complaints.	10 to 30 grs. in water or any bland fluid.
„ gallicum	Gallic acid	Astringent	In vesicle and uterine hemorrhages.	1 to 15 grs.
„ hydriodicum dilutum.	Dilute hydriodic acid.	Stimulant, absorbent	In glandular swellings and dropsy.	1 drm. diluted with water.
„ hydrochloricum	Muriatic acid	Tonic, diuretic, anti septic.	In typhus gargles, sore throats, gonorrhæa.	5 to 20 drops properly diluted.
„ hydrochloricum dilutum.	Diluted muriatic acid.	Tonic, diuretic, anti septic.	Sore throats, cutaneous eruptions, etc.	10 to 20 drops diluted.

Medicine.	Common Name.	Operation.	Use.	Dose.
Acidum hydrocyanicum dilutum.	Diluted prussic acid	Antispasmodic, sedative	In asthma, spasmodic coughs, hiccough, nervous affections, palpitation of the heart.	2 drops gradually increased to 5 in a glassful of water.
,, lacticum	Lactic acid	Cooling	In dyspepsia and phosphatic deposits.	1 to 3 drs. in sweetened solution.
Adansonia digitata	Baobab	Diaphoretic	In miasmatic diseases of the West Indies.	In decoction of bark and leaves to 1 pt. daily.
Adeps	Lard	Emollient	In the formation of ointments.	Used externally.
Æther sulphuricus	Sulphuric ether	Stimulant, narcotic, antispasmodic.	Hysteria, asthma, tetanus, epilepsy.	20 to 60 drops in 12 ozs. of water.
Agaric	Spunk	Cathartic	In torpid liver	5 to 30 grs.
Ætheris spiritus sulphurici comp.	Comp. spirits of sulphuric ether	Stimulant, stomachic	In weakness of the stomach, flatulency and languor.	30 to 120 drops in 1½ oz. of water.
Alcohol	Alcohol	Stimulant, sedative	Never used in its undiluted form. In debility and low fevers.	¼ to 1 drm.
,, amylicum	Fusel oil	An active ointment poison.	In the arts and adulterating liquors.	
,, methylic	Wood naphtha	Narcotic, sedative	Cheap substitute for alcohol	10 to 40 drops.
Aletris	Star grass	Tonic, stomachic	In rheumatism and dropsy	10 grs.
Allium	Garlic bulbs	Stimulant, diuretic, expectorant.	In dropsy, asthma, hysteria, intermittents.	1 to 6 cloves, swallowed without chewing 2 or 3 times a day.
Almus rubra	Tag alder	Alterative, emetic, astringent.	In scrofula, secondary syphilis, etc.	60 to 120 drops fluid extract.
Aloe socotrina	Socotrine aloes	Cathartic, stimulating anthelmintic.	To act as purgative on the large intestines.	2 to 10 grs.
Althæ folia et radix	Marshmallow leaves and root	Emollient, lubricating, emulcent.	In pulmonary and intestinal affections, ardour urine, calculus.	Fluid extract 1 to 2 drms. Syrup 1 to 3 drms.
Alumen	Alum	Emetic, laxative, astringent.	In croup, hemorrhages, whooping cough, leucorrhea, gleet, etc.	10 to 60 grs. in powder whey, 2 drms. of the powder in 1 pt. hot milk.
,, exsiccatum	Dried alum	Escharotic	To destroy fungus in ulcers	4 to 12 grs.
Aluminæ sulphas	Sulphate of ammonia.	Astringent, antiseptic	Used externally.	
Ambergris	Ambergris	Antispasmodic	Hysteria, epilepsy	5 to 6 grs.
Ammoniacum	Gum ammoniac	Expectorant, resolvent, antispasmodic.	In asthma, chronic catarrh, obstinate colic, white swellings.	10 to 60 grs.
Ammoniæ arsenias	Arseniate of ammonia.	. . . . .	In inveterate skin diseases	20 drops of solution of 1 gr. to the oz. of distilled water.
,, bicarbonas	Bicarbonate of ammonia.	Stimulant, antacid, diaphoretic.	Hysteria, chronic rheumatism, dyspepsia.	5 to 20 in pills; 30 grs. as emetic.
,, carbonas	Sesqui carb.	Stimulant, antacid, diaphoretic.	Applied to the nostrils in syncope.	5 to 20 grs. in any bland fluid.
,, murias	Sal-ammoniac	Aperient, diuretic, stimulant.	To abate inflammations, allay headache.	Internally 2 to 5 grs., externally 1 oz. of salt to alcohol 1 oz., water 9 ozs., a good lotion.
,, valerinas	Valerinate of ammonia.	Stimulant, antispasmodic.	In neuralgia, epilepsy, chorea.	2 to 8 grs. in water or in pill.
,, bromidum	Bromide of ammonia.	. . . .	In rheumatism, secondary syphilis.	2 to 20 grs.
Ammonii iodidum	Iodide of ammonia.	. . . . .	Used externally as a substitute for Iodine.	1 to 3 grs.

Medicine.	Common Name.	Operation.	Use.	Dose.
Amygdalæ amaræ et dulcis.	Bitter and sweet almonds.	Demulcent, the bitter sedative.	In inflammatory complaints and as a vehicle for more active remedies	1 to 3 fluid ozs.
Amylum . .	Starch . .	Demulcent, nutritious .	In dysentery, tenesmus, ulceration of the rectum	Useful with which to exhibit opium per anum, usually 4 drms. of starch to 1 pt. of water.
Anethum . . .	Dill seed . .	Stimulant . . .	Used in flatulent colic, hiccough of infants.	10 to 60 grs.
Angelica . . .	Angelica root .	Tonic, sudorific, carminative.	In dyspepsia and nausea .	30 to 60 grs.
Anisum	Anise seed . .	Carminative . .	Dyspepsia and the tormina of infants.	10 to 60 grs. bruised
Anthemis . . .	Chamomile flowers	Tonic, stomachic, antiperiodic.	Intermittents, dyspepsia, hysteria, colic.	½ to 2 drms. twice a day.
Antimonii et potassæ, tartras.	Tartar emetic .	Emetic, cathartic, diaphoretic, expectorant	In the beginning of fevers, in pneumatic inflammations, hooping cough.	In inflammations ½ to 2 grs. as an emetic, 1 to 4 in solution.
Antimonium sulphuratum.	Precipitated sulphur of antimony	Diaphoretic, cathartic .	In scrofula, cutaneous diseases, etc.	5 to 10 grs.; 1 to 2 as alterative.
Apocynum cannabinum .	Indian hemp .	Emetic, expectorant, narcotic, sedative.	A very powerful remedy in ascites and general dropsy.	10 to 20 grs. produces free vomiting; 3 to 4 grs. twice or thrice a day as a cathartic.
Aralia nudicaulis . .	False sarsaparilla	Stimulant, diaphoretic	Cutaneous eruptions, rheumatism.	Employed as genuine sarsaparilla.
„ spinosa . .	Angelica tree .	Stimulant, diaphoretic, alterative.	Employed in chronic rheumatism, toothache.	Usually given in decoction.
Arctium lappa . .	Burdock . .	Aperient, diuretic, sudorific.	Gout, scrofula, rheumatism, nephritic affections.	Make a decoction of the leaves, 2 ozs. to 1½ pt. of water Dose.—A teacupful several times a day.
Argenti iodidum . .	Iodide of silver .	Tonic, antispasmodic, escharotic . .	In cholera, epilepsy, in erysipelas, and as gargle.	⅛ gr. in a pill.
„ nitras . .	Nitrate of silver	Antispasmodic, escharotic, tonic . .	In chorea, epilepsy, dyspepsia.	⅛ gr., increased to 4 grs. in pill with mucilage.
Armoracia . . .	Horse-radish root	Stimulant, diaphoretic	In scorbutus, dropsy, dyspepsia.	20 to 60 grs. See infusions.
Arnica montana .	Leopard's bane .	Narcotic, diaphoretic .	Paralysis, gout, dropsy, rheumatism.	5 to 10 grs. in powder. Also, externally.
Arum . . .	Indian turnip .	Stimulant . . .	In asthma, chronic catarrh.	5 to 10 grs., mixed with gum arabic, sugar and water.
Asarum canadense . .	Wild ginger .	Stimulant, tonic, diaphoretic.	Used as an adjunct to infusions and decoctions.	
Asclepias incarnata .	Com. silk weed .	Expectorant, cathartic	Catarrh, pneumonia, pleurisy.	20 to 60 grs. several times a day.
Assafœtida . . .	Assafœtida .	Antispasmodic, expectorant, anthelmintic	Hysteria, asthma, worms, dyspnœa.	10 to 30 grs.
Atropia	Atropia . .	Powerful narcotic, diaphoretic.	In intermittents, neuralgia, as colynum.	8 grs. to 1 oz. of lard in neuralgia. Apply.
Balsamum peruvianum .	Peruv. balsam .	Stimulant, tonic, expectorant.	In palsy, asthma, gleet .	10 to 30 drops thrice a day.
„ tolutanum .	Balsam of tolu .	Stimulant, expectorant	In chronic coughs . .	Used principally on account of its flavour.

Medicine.	Common Name.	Operation.	Use.	Dose.
Baptisia tinctoria	Wild indigo	Antiseptic, laxative, emetic.	In scarlatina, gangrene	½ oz. of decoction.
Belladonna	Deadly nightshade.	Powerful narcotic, diaphoretic.	Tic-douloureux, palsy, dropsy, chorea, etc., etc.	½ gr., increased to 1 gr., daily.
Benzoinum	Benzoin	. . . . . .	Principally for obtaining the acid it contains.	10 to 30 grs.
Bismuthi subnitras	Subnitrate bismuth.	Antispasmodic, absorbent, sedative.	In dyspepsia, attended with cardialgia.	1 to 15 grs.
Boras sodæ	Borax	Diuretic, refrigerant	In gastric irritation; as a gargle in amphthæ.	10 to 60 grs.
Brominum	Bromine	Stimulates the lymphatics.	In scrofula, broncocele	In aqueous parts of 1 to 40 of water, 6 drops several times a day.
Buchu	Barosma	Stimulant, diaphoretic	In irritation of the bladder.	20 to 30 grs. in powder.
Calamus aromaticus	Sweet flag	Stomachic, carminative	In atonic dyspepsia	20 to 60 grs. in powder.
Calumba	Columbo	Tonic	Used in dyspepsia	10 to 20 grs. or make an infusion and take wineglass.
Camphora	Camphor	Diaphoretic, narcotic, sedative.	In malignant sore throat, pneumonia, mania, hysteria.	2 to 20 grs. in powder, with sugar.
Canella	Canella bark	Stimulant, cathartic, tonic.	Used as an addition to bitters.	10 to 30 grs.
Cantharis	The blister fly	Stimulant, diuretic, vesicant.	Internally in dropsies, gleet, retention of urine.	½ to 1 gr., in pill.
Capsicum	Red pepper	Stimulant, rubefacient	In atonic gouts, dyspepsia; for gargles in sore throat.	3 to 10, in pill.
Carbo ligni	Charcoal of wood	Antiseptic, absorbent	In obstinate constipation, tooth powder.	10 to 20 grs. united with rhubarb.
Cardamom	Cardamom seed	Carminative, stomachic	In colic of children	5 to 60 grs. in powder with rhubarb and magnesia.
Carthamus	Dyer's saffron	Laxative	Scarlatina	Given in infusion, unlimited.
Caryophyllus	Cloves	Stimulant	As a corrigent to other remedies.	5 to 10 grs.
Cascarilla	Cascarilla bark	Tonic, stomachic	As an adjunct to cinchona, in ague, in obstinate diarrhœa and dysentery.	10 to 60 grs. in powder.
Castorium	Castor	Antispasmodic, emmenagogue.	In typhus, hysteria, epilepsy.	10 to 20 grs. in pills.
Catechu	Catechu	Astringent, tonic	In diarrhœa, in uterine, hemorrhages, ulceration of the groins.	10 to 60 grs.
Caulophyllum	Blue cohosh	Diaphoretic, emmenagogue.	In fevers	1 to 2 ozs. of infusion.
Cetaceum	Spermaceti	Demulcent, emollient	In cough and dysentery	30 to 90 grs. rubbed up with sugar or with an egg in emulsion.
Chenopodium	Wormseed	Anthelmintic	To destroy worms in children, followed by calomel.	Of the powdered seeds 20 to 40 to a child 2 or 3 years old, in syrup.
Chloral	Chloral hydrate	Hypnotic and anodyne	In delirium tremens and nervous diseases to produce sleep.	10 to 40 grs., in syrup.
Chloroformum	Chloroform	Anæsthetic, anodyne	It is used in surgery and in cases of cholera, colic, etc.	10 to 60 drops internally.

Medicine.	Common Name.	Operation.	Use.	Dose.
Chondrus	Irish moss	A substitute for the Iceland moss.	Very nutritious	Used in decoctions of 1 to 3 ozs. flavoured with lemon.
Cimicifuga	Blacksnake root	Tonic, diuretic, emmenagogue.	Dropsy, hysteria, rheumatism, and chorea.	10 to 60 grs. in powder, but usually administered in form of decoction.
Cinchona	Peruvian bark	Tonic, antispasmodic, astringent, febrifuge.	In erysipelas, intermittent fevers, and scarlatina.	3 to 10 grs. given in orange peel syrup.
Cinnamomum	Cinnamon bark	Stimulant, astringent, carminative.	As a grateful aromatic in dyspepsia and diarrhœa.	5 to 20 grs. in powder.
Colchici radix et semen	Bulb and seeds of the meadow saffron.	Narcotic, cathartic, diuretic.	In dyspepsia, gout, rheumatism, neuralgia, bronchitis.	1 to 5 grs.
Colocynth	Bitter cucumber	Strongly cathartic, drastic, hydrogogue	Combined with calomel, extract of jalap and gamboge.	1 to 5 grs.
Conium	Hemlock	Narcotic, poisonous, resolvent.	Used in cancer, scrofula, syphilis, enlargement of liver.	2 to 4 grs. of the powder; of the extract 2 drops to 1 drm.
Copaiba	Balsam copaiba	Stimulant, diuretic, purgative.	In gonorrhœa, gleet, dysentery, hemorrhodal affections.	10 to 60 drops in emulsion.
Conus florida	Dogwood	Tonic, astringent	In all cases to which Peruvian barkis adapted.	May give in powder, decoction or ext. of the powder, from 20 to 60 grs.
Creosotum	Creosote	. . . . .	Externally applied in rheumatism, neuralgia; internally in dyspepsia, to allay vomiting.	1 to 3 drops.
Creta præparata	Prepared chalk	Antacid, externally absorbent.	In diarrhœa, acidity of the stomach, sprinkled on burns.	10 drops or more.
Crocus	Saffron	Stimulant, purgative	In hysteria, and other nervous affections; to colour officinal tinctures.	5 to 30 drops.
Cubeba	Cubebs	Stimulant, purgative, diuretic.	In gonorrhœa, gleet, chronic diseases, leucorrhœa.	10 to 30 grs. of the powder every six hours.
Cupri acetus	Acetate of copper	Tonic, stimulant, escharotic.	In epilepsy, chorea and other spasmodic affections.	$\frac{1}{4}$ to 2 grs.
„ sulphas	Sulphate of copper.	Tonic, emetic, astringent, escharotic, styptic.	In epilepsy and intermittent fevers, phthisis; to produce vomiting in poisoning, as colrium in phthalmia.	As a tonic $\frac{1}{4}$ to 2 grs. in a pill, 2 to 10 grs. in 2 ozs. of water to vomit.
Digitalis	Foxglove	Stimulant, diuretic, sedative.	Inflammatory diarrhœa, dropsies, hemorrhages.	1 gr. in pill with opium.
Dioscorea villosa	Wild yam	Antispasmodic, sedative	Given in bilious colic	1 to 6 grs.
Dracontium	Skunk cabbage	Stimulant, antispasmodic, expectorant.	Asthma, hysteria, rheumatism, epilepsy, whooping cough.	10 to 20 grs. three or four times a day. It may also be given in infusion.
Dulcamara	Woody nightshade.	Diuretic, narcotic, alterative, sudorific.	Humoral asthma, chronic rheumatism, scrofula, jaundice.	5 to 10 grs. of the extract, 20 to 60 in powder.
Elaterium	Wild cucumber	Violent cathartic, diuretic.	In dropsies.	$\frac{1}{10}$ to $\frac{1}{4}$ in pill, or $\frac{1}{2}$ gr. every hour till it operates.

Medicine.	Common Name.	Operation.	Use.	Dose.
Ergota	Spurred rye .	Stimulant, narcotic .	Very useful in parturition, in hemorrhages.	½ to 1 teaspoonful of fluid extract as may be required.
Erigeron . . .	Fleabane . .	Diuretic, tonic, astringent.	In dropsies, diarrhœa and gravel.	Of the aqueous extract 5 to 10 grs. every hour.
Eucalyptus globulus .	Australian gum tree.	Stimulant, diuretic .	In fevers and intermittents.	Tincture ½ to 2 ozs., oil 5 to 10 drops.
Euonymus atropurpureous.	Burning bush .	Tonic, laxative, expectorant.	In dropsy.	Of the fluid extracts, 1 to 2 drms.
Eupatorium perfol. .	Thoroughwort boneset.	Tonic, emetic, diaphoretic, aperient.	In catarrh, intermittents, remittents, dyspepsia.	As a tonic, 20 to 60 grs. of the powdered leaves, or 1 to 4 ozs. infusion, as a diaphoretic.
Ferri et ammonia citras .	Citrate of iron and ammonia.	Tonic and diaphoretic .	A pleasant and soluble chalybeate.	5 grs. several times a day.
,, iodidum . .	Iodide of iron .	Tonic, emmenagogue .	In all cases of debility, scrofula, cancer.	1 to 8 grs.
,, oxidum hydratum .	Hydrated oxide of iron.	. . . . .	As an antidote for poisoning with arsenic and its salts.	1 drm. frequently repeated.
,, subcarbonas . .	Subcarbonate of iron.	Tonic, alterative, emmenagogue.	In neuralgia, dyspepsia, chlorosis, chorea, cancer.	5 to 30 grs. united with myrrh or some aromatic.
,, sulphas . . .	Sulphate of iron	Tonic, astringent, emmenagogue.	In diseases of general debility, diabetes, amenorrhœa.	1 to 5 grs. combined with myrrh and bitter extracts.
Ferrum	Iron . . .	Tonic, anthelmintic, deobstruent.	In general debility, dyspepsia, hysteria, chlorosis, worms.	Ferrum per hydrogen—the most useful way, 2 grs. in pill after meals.
Filix mas . . .	Male fern root .	Anthelmintic . .	In tinealata, followed by active purgatives.	2 to 3 drms. of the solid part of the powdered root.
Fœniculum . . .	Fennel . .	Carminative, diuretic .	In flatulencies . . .	20 to 60 grs. bruised, to 1 pt. of boiling water.
Frasera	American colombo.	A mild and valuable tonic.	In all cases where a pure tonic is needed.	30 to 60 grs. See infusions.
Galbanum . . .	Galbanum gum resin.	Internally antispasmodic, expectorant, discutient, resolvent.	In hysteria, chlorosis, indolent tumours.	10 to 60 grs. in emulsion.
Gallæ	Galls . . .	Powerfully astringent, tonic.	Diarrhœa, intestinal hemorrhages, and intermittents.	10 to 20 twice or thrice a day.
Gambogia . . .	Gamboge . .	Drastic, cathartic, emetic, anthelmintic.	In visceral obstructions and dropsy.	2 to 10 grs. in powder, with calomel.
Gaultheria . . .	Partridgeberry .	Stimulant, cordial, astringent, emmenagogue.	In diarrhœa, amenorrhœa, but chiefly to flavour other medicines.	Oil, 2 to 10 drops; infusion, 2 to 4 ozs.
Gelseminum . . .	Yellow jasmine .	Febrifuge . . .	Neuralgia, headache .	Fluid extract, 3 to 20 drops.
Gentiana . . .	Gentian root .	Tonic, stomachic . .	Jaundice, hysteria, dyspepsia.	20 to 40 grs.
Geranium . . .	Crane's bill .	A powerful astringent	In diarrhœa, dysentery .	20 to 40 grs. ; it may be given to children boiled in milk.
Geum	Water avens .	Tonic, astringent .	,, ,, leucorrhœa .	20 to 60 grs. three times a day.
Gillenia	Indian physic .	Emetic, cathartic .	As a mild emetic, where such medicines are indicated.	20 to 30 grs. as emetic, repeated every 20 minutes.

Medicine.	Common Name.	Operation.	Use.	Dose.
Gassypium	Cotton	Emmenagogue	Used in burns and to blister; a solution of gun cotton in ether forms collodion.	Of tincture, 1 drm.
Granatum	Pomegranate bark and flowers.	Astringent, anthelmintic.	In diarrhœa, dysentery, tapeworm.	In substance, 30 grs.; decoction, ½ oz.
Grindelia robusta		Diaphoretic	Used in California as antidote to effects of poison oak.	A wineglass of syrup from decoction.
Guaiaci resina lignum	Guaiacum, resin and wood.	Stimulant, diaphoretic.	In chronic rheumatism, gout, cutaneous diseases.	5 to 20 grs. in pills, or an emulsion.
Hæmatoxylon	Logwood	Astringent, tonic	In protracted stages of diarrhœa and dysentery.	Of decoction 1 to 2 ozs., every 3 or 4 hours.
Hamamelis virginica	Witch hazel	Astringent, sedative	In hemorrhages and piles; for the latter equal parts of this bark, white oak bark and bark of the apple tree in decoction made up with lard.	Fluid extract, ½ drm.
Helleborus	Black hellebore root.	Cathartic, emmenagogue, hydragogue.	In mania and melancholia and dropsy.	10 to 40 grs.
Hepatica	Liverwort	Demulcent, tonic, astringent, diuretic	In chronic coughs and hepatic affections.	Fluid extract 1 to 2 drms.
Heracleum	Masterwort	Stimulant, carminative	In epilepsy, attended with flatulency.	2 to 3 drms. of the powdered root.
Humulus	Hops	Narcotic, anodyne, diuretic.	In gout and rheumatism.	3 to 20 grs. in cinnamon water, or 1½ oz. infusion.
Hydrargyri chloridum corrosivum.	Corrosive sublimate.	Stimulant, alterative, antisyphilitic.	In venereal complaints, with the greatest advantage in chronic rheumatism.	$\frac{1}{12}$ to ¼ gr. made into a pill.
Hydrargyri chloridum mite.	Calomel	Antisyphilitic, alterative.	In bilious diseases and chronic hepatitis, combined with opium.	1 to 2 grs. at night.
Hydrargyri iodidum viride.	Iodide of mercury	Excellent alterative	In strumous affections and lepra.	½ to 2 grs. in a pill or dissolved in alcohol.
Hydrargyri cum creta	Mercury with chalk.	Alterative, antisyphilitic	In porrigo and other cutaneous affections; an alterative in visceral diseases of children.	5 to 30 grs. twice a day in any viscid substance.
Hydrastis canadensis	Yellow root	Tonic, astringent	In infusions, as collyria to old ulcers in gonorrhœa.	1 drm. of fluid extract.
Hyoscyami folia et semina.	Henbane leaves and seed.	Narcotic, anodyne, antispasmodic.	In epilepsy, hysteria, palsy, mania, palpitation, and scirrhus, as a substitute for opium.	3 to 10 grs. of the powder, but generally the extract is preferred.
Ipecacuanhæ radix	Ipecac	Emetic in large doses, sudorific expectorant in small.	In inflammatory disease, to produce vomiting, good in dysentery, pertussis.	20 grs. as emetic alone or united with 1 gr. tartar emetic.
Iris versicolor	Blue flag	Cathartic, emetic, diuretic.	But seldom used, owing to the dreadful nausea and prostration it occasions.	10 to 20 grs. of dried root.
Jalapa	Jalap	Cathartic, gripes violently.	In costiveness, mania, worms, dropsy, and quickens the operation of chloride of mercury.	10 to 30 grs. in pill.
Juglans	Butternut	Cathartic	In habitual costiveness, fevers, combined with calomel.	20 to 30 grs. as purgative, 5 grs. as laxative.

Medicine.	Common Name.	Operation.	Use.	Dose.
Juniperus . . .	Juniper fruits and tops.	Diuretic, carminative, diaphoretic.	In dropsies with squills and digitalis, as adjunct.	20 to 30 grs. triturated with sugar.
„ virginiana .	Red cedar . .	Stimulant, diuretic, diaphoretic.	In chronic rheumatism, amenorrhœa, dropsy.	Make an irritant ointment by boiling the fresh leaves in twice their weight of lard.
Krameria . . .	Rhatany root .	Astringent, diuretic .	In dysentery attended with bloody stools.	10 to 60 grs. in powder.
Magnesia . . .	Magnesia . .	Antacid, laxative, when it meets with acid in stomach.	In heartburn, aphthæ and other acidities.	10 to 30 grs.
Magnesiæ sulphas . .	Sulphate of magnesia.	Purgative, diuretic .	In all cases which require purgatives.	$\frac{1}{2}$ to 1 oz.
Magnolia . . .	Magnolia . .	A gently stimulating aromatic tonic and diaphoretic.	In chronic rheumatism, intermittents and gastric debility.	Of the powdered bark 30 to 60 grs. often repeated.
Melia	Pride of China .	Cathartic and anthelmintic.	As a purgative . .	3 or 4 ozs. of the bark of the root to a quart of water; boil to a pint; give a teaspoonful.
Mel rosæ . . .	Rose Honey .	Astringent, detergent .	Chiefly in gargles in ulceration and inflammation of the mouth and fauces.	Q. S.
Mentha piperita . .	Peppermint .	Stomachic, carminative	Scarcely ever used in substances.	Fluid extract $\frac{1}{2}$ to 1 drm.
„ viridis . .	Spearmint . .	Stomachic, carminative	See oleum mentha viridis .	10 to 60 grs. Scarcely ever used in substance.
Mezereum . . .	Mezereon bark .	Stimulant, diaphoretic	In venereal diseases but doubtful.	Of the powder 1 gr., gradually increased to 10.
Morphia . . .	Morphia . .	Narcotic, excitant .	Chiefly to prepare the more soluble salts.	Rubbed upon the skin it produces narcotic effect.
„ murias . .	Muriate of morphia.	Narcotic, excitant .	Used endermically preferable to the acetate.	$\frac{1}{6}$ gr.
„ acetate . .	Acetate of morphia.	Narcotic . . .	Used in severe pain, being quicker but not so lasting as opium.	$\frac{1}{8}$ to $\frac{1}{4}$ gr.
„ sulphate . .	Sulphate of morphia.	Powerfully narcotic and sedative.	Used in all cases requiring the use of opium.	$\frac{1}{8}$ to $\frac{1}{3}$ gr.
Moschus . . .	Musk . .	Stimulant, antispasmodic, diaphoretic.	Used in spasmodic affections, hysteria, pertussis, epilepsy.	2 to 30 grs. every three or four hours.
Myristica . . .	Nutmeg mace .	Stomachic, stimulant .	To relieve nausea and vomiting, and to check diarrhœa.	Of the nutmeg and mace, 5 to 20 grs., of the oil 2 to 6 drops.
Myrrha . . .	Myrrh . .	Stimulant, expectorant	In cachetic complaints, humoral asthma, chronic catarrh, etc	10 to 30 grs. in powder.
Naphtha . . .	Petroleum . .	A stimulating antispasmodic, and sudorific .	Used in all painful affections of the chest, take warm by mixing one part petroleum with one and a half part of assafœtida.	Mix one scruple naphtha suspended by a small quantity of boiling alcohol in 4 ozs. of simple syrup, and give a teaspoonful every 15 minutes until expectoration is established.

Medicine.	Common Name.	Operation.	Use.	Dose.
Opium	Opium . .	Antispasmodic, stimulant in small doses, but in larger, narcotic, diaphoretic.	Used in all pampel affections, in diarrhœa, intermittents, typhus, cholera, and pyrosis.	$\frac{1}{4}$ to $\frac{1}{2}$ gr.; 1 to 2 grs. is narcotic.
Papaver . . .	White poppy capsules.	Relaxant anodyne .	Externally as a fomentation.	4 ozs. of the dried leaves to 4 pts. of water boiled to 2 pts.
Pareira . . .	Pareira brava .	Tonic, aperient, diuretic	In irritable bladder .	30 to 60 grs.
Paullinia . . .	Guarana . .	Tonic, nervine . .	Headaches	8 to 10 grs. alcohol extract.
Phosphas soda . . .	Phosphate of soda	Purgative . . .	In all cases where the bowels require to be opened; dissolve in broth without salt.	1 to 2 drms.
Phytolaccæ baccæ et radix.	Pokeberries .	Emetic, purgative, alterative, narcotic .	An an escharotic by cancer doctors, in chronic rheumatism.	As an emetic, 10 to 30 grs.; as an alterative, 1 to 5 grs.
Piper nigrum . .	Black pepper .	Tonic, antispasmodic, stimulant.	To check nausea, remove hiccough; said to cure ague.	10 to 20 grs.
Plumbi acetas . .	Acetate of lead .	Astringent in weak solutions; cooling and sedative in strong.	Internal, in visceral hemorrhage; externally, in solution, in phlegmonous inflammations.	1 to 3 grs. in powder, with opium; 1 to 3 drms. to 1 pt. of distilled water for a wash.
,, carbonas . .	Carbonate of lead	Astringent, sedative .	Sprinkled on parts affected with local inflammations.	External use.
Podophyllum peltatum .	May apple, mandrake.	An active and certain cathartic.	In most inflammatory affections, where brisk purging is indicated; also in bilious fevers.	Of the powdered root, 20 grs.
Potassæ acetas . .	Acetate potash .	Mild cathartic, diuretic	In febrile diseases, dropsies, and in visceral obstructions.	20 to 60 grs. as diuretic; 1 to 3 drms. to open the bowels.
,, bichromas . .	Bichromate of potash.	Alterative, emetic .	In sluggish state of the liver.	$\frac{1}{6}$ gr. daily as an alterative; $\frac{3}{4}$ as an emetic.
,, bitartras . .	Bitartrate of potash, cream of tartar.	Mildly purgative, refrigerant, diuretic.	In ascites, proceeding from visceral obstructions, and to open the bowels in inflammatory habits.	20 to 60 grs., combined with 20 grs. sodæ biboras, to excite the kidneys.
,, carbonas purus .	Pure carbonate of potassa, salt of tartar.	Diuretic, antacid .	In dropsies, acidities of the primæ viæ, and glandular obstruction.	10 to 30 grs., properly diluted.
,, chloras . .	Chlorate of potassa.	Refrigerant, diuretic .	In scurvy, scarlatina, and as a wash in cancrum oris.	10 to 30 grs.
,, nitras . .	Nitrate of potassa	Diuretic, refrigerant .	In fevers, dropsies, herpetic eruptions, active hemorrhages.	10 to 30 grs.
,, permanganas .	Permanganate of potash.	A powerful disinfectant	Diphtheria and pestilential fevers.	Solution of 10 parts in 90 of water, or $\frac{1}{2}$ gr. doses
,, sulphas . .	Sulphate of potash	Purgative . . .	To open the bowels in febrile diseases, mania and hypochondriasis.	1 drm. to 1 oz. in solution.
,, sulphuretum .	Sulphate of potassium.	Expectorant, diaphoretic.	In chronic asthma, chronic catarrh and rheumatism, hepatic and other cutaneous diseases.	2 to 10 grs. combined with soap or extract of conium in pills or mixture.

Medicine.	Common Name.	Operation.	Use.	Dose.
Prunus virginiana .	Wild cherry bark	Tonic, sedative .	In debilitated states of the stomach or general system; it allays the action of the heart, and is highly useful in fevers.	30 to 60 grs.
Quassia	Quassia wood .	Tonic, stomachic .	Intermittents and bilious fevers, in hysteria united with tincture of valerian.	Generally used in infusion or extract, which are preferable.
Quiniæ murias . .	Muriate of quinine.	Tonic	In intermittents and all periodic diseases.	1 to 10 grs.
„ sulphas . .	Sulphate of quinine.	Tonic	In intermittents and all periodic diseases as a tonic; also as a febrifuge in bilious intermittents.	1 to 10 grs.
„ valerianas . .	Valerianate of quinine.	Nervine . . .	In neuralgia and hemicrania.	1 to 2 grs.
Rheum	Rhubarb . .	Stomachic, purgative .	In costiveness from laxity of bowels, particularly children, and diarrhœa	10 to 30 grs. of the powder to open the bowels; 6 to 10 grs. to act as a stomachic.
Rubus trivialis, villosus .	Dewberry root, or blackberry root	Astringent, tonic .	In diarrhœa from debility, cholera infantum, chronic dysentery	Of the decoction 1 oz., 1½ pt. of water, boiled to 1 pt.; of the powdered root, 20 to 30 grs.
Sarsaparilla . . .	Smilax, officinalis	Diuretic, demulcent .	In the treatment of syphilis, nocturnal pains, enlargement of penis, in scrofula.	20 to 60 grs. of the powder.
Scammonium . .	Scammony .	Drastic, purgative .	In obstinate costiveness, worms, dropsy; in combination with other cathartic, as aloes.	3 to 15 grs. triturate with sugar.
Scilla	Squill . .	Emetic in large doses, purgative in small.	In pulmonary complaints, humoral asthma, dropsy, and pertussis.	1 to 5 grs. of the dried root.
Sodæ boras . . .	Borate of soda .	Diuretic, emmenagogue.	In nephretic and calculous complaints.	20 to 40 grs. combined with cream of tartar.
„ carbonas . .	Carbonate of soda	Antacid . . .	In dyspepsia and acidities of the stomach, united with bitters.	10 to 30 grs. twice or thrice a day.
„ hyposulphis . .	Hyposulphite of soda.	Arrests fermentation .	Excellent in diphtheria, in connection with iron.	10 to 20 grs. three times a day.
„ sulphas . . .	Sulphate of soda	Purgative in small doses, diuretic.	In costiveness, in bilious colics, largely diluted.	Of the effloresced salt in powder 3 to 6 drms. Use lemon juice or cream of tartar with it.
Spigelia	Indian pink root	Anthelmintic . .	For the expulsion of lumbrici in the remitting fevers of infancy.	10 to 30 grs. of the powdered root.
Stillingia . . .	Queen's root .	Emetic, cathartic .	In secondary syphilis, scrofula.	15 to 30 grs.; 20 to 40 drops of fluid extract.
Strychnia . . .	Strychnine .	Tonic . . .	As a tonic in pyrosis, chronic diarrhœa, and leucorrhœa; in cases of partial paralysis.	$\frac{1}{16}$ to $\frac{1}{12}$ gr.

Medicine.	Common Name.	Operation.	Use.	Dose.
Strychnos	Nux vomica	„ stimulant	In dyspepsia, gout, rheumatism, and especially in paralysis of the lower limbs.	3 to 12 grs.
Sulphur	Sublimed sulphur	Stimulant, laxative, diaphoretic.	As a laxative in chronic rheumatism, atonic, gout, asthma, pulmonary affections.	½ to 2 drms. taken night and morning.
Sulphuris iodium	Iodide of sulphur	A powerful alterative in lupus acne and psoriasis.	In cutaneous affections, secondary syphilis, etc. (See ointment.)	½ to 1 gr.
Tanacetum	Leaves of tansy	Tonic, anthelmintic	In gout, hysteria, connected with suppression of the menses.	30 to 60 grs. It is drank as a tea by gouty persons.
Taraxacum	Root of dandelion	Aperient, diuretic, resolvent.	In chronic inflammation and chronic derangement of the stomach, dropsy, etc.	2 ozs. of a decoction three or four times a day.
Terebinthina	Turpentine	Stimulant, diuretic, laxative.	Used extensively in bowel affections.	½ drm.
Toxicodendron	Poison oak	Stimulant, narcotic	In paralytic affections	½ to 4 grs. twice a day.
Tragacantha	Tragacanth	Demulcent	Small quantities held in the mouth sheathe the fauces and allay tickling cough.	10 to 60 grs.
Uva ursi	Leaves wild cranberry or bear's berry.	Tonic	In chronic diarrhœa and dysentery, leucorrhœa, and diabetes.	15 to 30 grs.
Valeriana	Valerian root	Antispasmodic, emmenagogue, tonic.	Hysteria, epilepsy, hemicrania, chlorosis.	20 to 60 grs. twice or thrice a day.
Veratum album	White hellebore root.	Violent emetic, purgative, externally stimulant.	It is never given internally, unless in maniacal cases.	1 to 2 grs.
Veratrum viride	American hellebore.	Sedative, diaphoretic, emetic.	It is an arterial sedative in fevers and pneumonia.	3 to 5 drops of the tincture.

ASTHMA.

Symptoms.—Difficult breathing occurring in paroxysms, accompanied by a wheezing sound; a great desire for fresh air; difficulty of breathing increased by violent emotions or damp atmosphere; an endeavour to expand the chest mechanically by every possible means; hands and feet are cold, the body wet with perspiration, the pulse irregular.

Cause. This troublesome complaint is caused by a spasm of the muscular fibres encircling the bronchial tubes, especially the small branches.

The action of the diaphragm is imperfect, as well as the walls of the chest.

If the symptoms of this complaint subside without expectoration, it is called *dry asthma*, but when any phlegm is raised, it is known as *humoral asthma*. There is also a third kind called *hay asthma* or *hay fever*, occurring in some persons during hay-making. It combines the peculiarities of asthma and coryza. The paroxysms occurring during the day. It is a distressing complaint.

ASTHMA.

Fluid Extract of Skullcap	1 drachm.
„ „ Skunk-cabbage	1 „
Spirits Lavender Compound	2 ounces.
Tincture Valerian	1 drachm.

Mix. *Dose*—20 drops.

ASTHMA.

Elecampane Root, bruised	1 ounce.
Angelica „ „	1
Comfrey „ „	1 „
Spikenard „ „	1 „
Horehound Tops	1
Steep in Honey	1 pint.

Dose.—Tablespoonful taken hot.

INTERMITTENT FEVERS.

Symptoms.—Cold stage—Yawning, stretching of the limbs, headache, sickness and sometimes vomiting, nails blue, gooseflesh, shivering, backache. The chill lasts from a few minutes to several hours. Hot stage—Fever comes on gradually, head-ache increased; skin hot; sometimes lasts three to twelve hours. Sweating stage—This increases from a mere moisture to a profuse perspiration. After this the body returns to its natural temperature, and apparent health returns.

FORMULAS.

Cold Stage.

Treatment.—Nitrate of amyl, 4 drops. Drop the nitrate on a silk handkerchief and allow the patient to inhale; when a warm glow will suffuse the whole body. Be careful and use this agent carefully.

Hot Stage.

Powdered Nitrate of Potass. . . .	1 drachm.
Tartar Emetic	1 grain.
Calomel	6 „

Mix. Make six powders.
Dose.—One every two hours.

If the patient suffers with severe headache, administer the following:—

Bromide of Potass.	2 drachms.
Sulphate of Morphia	1 grain.
Tincture Veratrum Viride . .	20 drops.
Water	2 ounces.

Mix. *Dose.*—Tablespoonful every two hours.

Sweating Stage.

During the sweating stage the patient should be wiped off with dry flannels, and at its conclusion, the wet clothing should be exchanged for clean and dry garments, and the body sponged with tepid water.

Now is the time for administering the following:—

Peruvian Bark	2 ounces.
Wild Cherry Bark	1 „
Cinnamon	1 drachm.
Capsicum	2 „
Sulphur	1 ounce.
Port Wine	2 quarts.

Pulverise the drugs, add the wine and let stand a day or two.
Dose.—A wine-glassful every two or three hours.

The following will be found useful:—

Sulphate Quinine	20 grains
Dover's Powder	10 „
Sub-carbonate of Iron	10 „
Gum Arabic	sufficient.

Mix. Divide into 20 pills.
Dose.—One night and morning.

BILIOUS FEVER.

Symptoms.—Chills, followed by fever and sweating; no complete intermission, all the other symptoms of ague or intermittent fever are present; sometimes jaundice; remittent fever may either follow or terminate in ague. There is a sense of languor and debility, slight headache, lack of appetite, furred tongue, bitter taste in the mouth, pain in the joints, and through the whole body. Usually there is but one well-marked chill; the paroxysms of fever returning subsequently, and seldom preceded by a cold stage.

The symptoms of this disease intensify at certain periods of the day; preceded occasionally, but not generally, by a chill. Between this period of severity in the febrile systems and a similar period following there is generally a decrease in the violence of the symptoms during which the fever moderates, but does not, as in intermittent fever totally disappear. It remits in severity, and hence the name. The pulse in the hot stage ranges from 100° to 130°. The pains in the head, back, and limbs are almost insufferable. The covering of the tongue is yellowish or dirty white, and in severe cases, in the advanced stage, the tongue is parched, brown or nearly black in the centre, and red at the edges. Food is distasteful, and nausea and vomiting ensue, with frequently pain, upon pressure, in the epigastrium. The bowels are at first costive, but become loose, and the fæces are dark and offensive.

Treatment.—Give an emetic or cathartic in the formative stage. When the disease is fully developed, sponge the body all over several times a day with cold or tepid water, whichever is most grateful to the patient, and give cooling drinks, as the effervescing draught. When the fever is high, moderate it with tincture or fluid extract of green hellebore, in doses of from three to ten drops. Dover's powder should be given as a diaphoretic. Ice-water can be drank at pleasure. A mustard poultice should be placed over the pit of the stomach whenever tenderness exists.

Quinine is the great remedy in this disease also, and should be administered in the same manner as advised in fever and ague. It is to be given in a remission. Whenever the fever has been subdued by large doses of quinine, its administration should not be abruptly ceased, but be continued in smaller or tonic doses for several weeks afterwards.

There is a form of fever called *Congestive.* It is also called *pernicious fever.* It is not essentially remittent, but may also be intermittent in character. The congestion may only operate upon one of the internal organs, or upon all of them. Congestion may ensue in the earlier or later stage of the disease. There is usually congestion of the brain, and profound stupor follows. It assumes all types of periodic fevers, but is more frequently quotidian or tertian. The first attack generally stimulates a simple attack of intermittent, and excites but little attention. The second attack is severe, producing great coldness, and the patient has a deathlike hue of face and extremities. As the disease advances, the heat of the skin becomes pungent. The skin also becomes dry, husky, and parched, followed, after a time, by a cold, clammy sensation. The eyes are dull and watery, and at times glassy, chills longer, and harder stupor, ending with sweat, hemorrhage from bowels, congestion of the lungs, pleurisy, jaundice, etc.

FORMULA No. 1.

Sulphate Quinine	1 drachm.
Calomel	15 grains.
Capsicum	5 ,,

Mix. Make 12 powders.
Dose.—One powder every three hours.

FORMULA No. 2.

Sulphate Quinine	15 grains.
Nitrate of Potass.	6 ,,
Elixir of Vitriol	20 drops.
Water	1 ounce.

Dose.—One teaspoonful every three hours.

FORMULA No. 3.

Powdered Nitrate Potass.	1 drachm.
Tartar Emetic	1 grain.
Calomel	6 ,,

Mix. Make 6 powders.
Dose.—One every three hours.

RETENTION OF URINE.

Symptoms.—Pain and swelling of the bladder; violent and fruitless attempts to make water, attended with excruciating pain, etc.

Treatment.—As a total retention of urine is always attended with considerable danger, there should be no delay in endeavouring to remove it. The first step is to place the patient immediately in the warm bath. While he is there a laxative and anodyne clyster must be got ready, which is to be given as soon as he leaves it, and soon repeated. In the meantime the warm fomentations and bladder of hot water must be kept applied, and the mixture below be taken every three or four hours. If there be any difficulty in procuring it, twenty drops of laudanum in a little warm barley or rice-water or a decoction of the dandelion, will answer instead. Warm sweet oil, or milk and water may be injected up the urethra, and three or four grains of camphor, in a little milk, be taken every hour.

If no relief is obtained by these means, leech the perineum, apply snow or ice to the bladder, or make the patient stand on a cold brick or stone pavement, and dash cold water over his thighs, and, if this fail, try the tobacco clyster, which sometimes succeeds after everything else has been resorted to in vain. If a catheter can be procured, try gently to pass it into the bladder while in the bath. If the patient himself cannot do it, let a handy friend attempt it; if foiled in one position, try another. Success is of the utmost importance, for there is nothing but an operation, in the event of its not being obtained, that can save life.

In every case of retention of urine the order of remedies then is: the warm bath, laxatives and anodyne clysters, fomentations or bladders half filled with warm water over the lower belly, camphor and milk every hour or every three hours, passing the catheter, leeching, dashing cold water over the thighs and legs, or applying snow or ice to the bladder, and, lastly, the tobacco clyster.

Mixture.—Mucilage of gum arabic, 1½ ounce; olive oil, 2 drachms. Rub them well together, and add ether, 1 drachm; laudanum, 30 drops.

ISCHURIA, OR SUPPRESSION OF URINE.

This frequently attends inflammatory diseases, especially acute nephritis. It may either arise from an irritation of the kidney beyond the point of secretion, or from a torpor or paralysis of the kidneys. It is important to distinguish it from *retention of urine.* It is sometimes very dangerous, being attended with vomiting, drowsiness, coma and convulsions. A vicarious secretion from the skin, bowels, etc., is also often established. It is evidently due to a sort of paralysis of the nerve centres.

Treatment.—Leeches may be placed over the loins, and digitalis or squill administered. The demulcent drinks should be freely used. If uric acid is in excess, some carbonate may be given. If dependent upon torpor, the stimulating diuretics, as turpentine, should be used. Frequent hot sitz-baths are also beneficial.

INCONTINENCE OF URINE (ENURESIS).

This is often associated with some constitutional weakness. The bladder may be exclusively irritated and not be able to hold the urine, or the little circular muscle at the neck of the bladder may be debilitated or paralysed, owing to acridity of the urine. In some cases it may be owing to debility of the kidneys.

Treatment.—A course of tonics, sea-bathing, cold baths, warm clothing, etc., together with astringents and stimulating diuretics, will usually cure it. Small doses of the extract of belladonna will also afford relief. In case of paralysis of the bladder, nux vomica, electricity, counter-irritant application to the spine, and local irritants, are necessary.

CYSTITIS.

This is an inflammation of the bladder. The symptoms are pain above the pubes, tenderness on pressure, the pain extending into the penis, scrotum and perineum, producing straining and pain in urination; sometimes pain over the abdomen, which is swollen, or the inflammation may extend to the peritoneum, causing peritonitis. It may terminate in suppuration, the pus appearing in the urine, or, if the abscess occurs in the coats of the bladder, it may open suddenly. It is caused by direct irritation as by a catheter; also by gonorrhœa, difficult labour, turpentine, cantharides, etc. When the inflammation becomes chronic it is called "*Catarrh of the Bladder.*"

Treatment.—Mucilaginous drinks should be freely used, such as decoctions of marshmallow, uva ursi, etc. Dover's powder may be given to relieve the pain. About three grains of populin and one-fourth of a grain of gelseminum given three or four times a day, exerts a marked beneficial influence in this disease; linseed oil and essential tincture of hydrangea are also remedies of great value. The chronic form will require special treatment, in accordance to condition and nature of each case.

INFLAMMATION OF THE STOMACH—GASTRITIS.

Symptoms.—Pressure and fulness at the stomach after eating, flatulence, heartburn, water brash, slimy tongue, headache, delirium, swallowing becomes difficult, pains in the limbs and face, sleeplessness.

This disease is much more common than is supposed, and may be often confounded with dyspepsia, but may be known from dyspepsia in there being more pain at some particular point, and more frequent vomiting after taking food.

Gastritis is often long continued, from which a thickening of the mucous membrane of the stomach occurs; gastric ulcers, contraction of the pylorous, and enlarged stomach, and consumption itself, very frequently follows chronic gastritis.

Treatment.—In the acute form, having got rid of the poison or irritating substance, when thus caused, apply mustard poultices over the stomach, along the spine, and to the extremities; also hot fomentations and poultices of hops or stramonium (Jamestown weed). Give ice by the mouth in small pieces, or iced water, in half to teaspoonful doses, or lime water and sweet milk (in equal quantities), in similar manner, to quench thirst, with one to three drops of tincture of aconite root, or veratrum to control the pulse and fever.

The diet cannot be too carefully managed while there is considerable tenderness. The nourishment must be of the most simple and unirritating kind; consisting of little more than the most bland nutritive drinks, and even this should be taken in small quantities at a time. Gum arabic water, rice water, barley water, arrowroot, gruel, tea, toast without butter, will be sufficient, and in two or three weeks a more nourishing diet may gradually be resumed.

Formula No. 1.

Pepsin	64 grains.
Water	2½ ounces.
Hydrochloric Acid	½ drachm.
Glycerine	1½ ounce.

Mix and filter.

Dose.—Teaspoonful.

Formula No. 2.

Pepsin	2 drachms.
Dilute Hydrochloric Acid	1 ,,
Mint Water	3 ounces.
Syrup of Orange Peel	1 ,,

Dose.—Teaspoonful, in equal quantity of water, directly after eating.

Formula No. 3.

Extract of Lupulin	1 drachm.
Nitrate of Silver	10 grains.
Subnitrate of Bismuth	1½ drachm.
Sulphate of Quinine	40 grains.

Mix, and make 40 pills.

Dose.—One three times a day.

Formula No. 4.

Extract of Hyoscyamus	15 grains.
Extract of Stramonium	4 ,,
Extract of Hops	1 drachm.
Sulphate of Morphia	1½ grain.

Mix. Make 30 pills.

Dose.—One every half-hour till easy.

ERYSIPELAS.

This disease commences with languor, aching or soreness of the limbs, chilliness, alternating with flushes of heat. The pulse is quick, skin hot, tongue foul, appetite gone, thirst, nausea sometimes; vomiting, headache, restlessness, sore throat, swelling and tenderness of the glands of the neck, armpits, or groin, according to the seat of the cutaneous inflammation. The eruption usually makes its appearance about the third day of the fever, in the form of a small reddish spot, somewhat elevated, painful or tender to the touch. This occurs most frequently upon the face, especially on the side of the nose, cheek, or rim of the ear. In some instances the inflammation advances slowly, in others it spreads quickly over large portions of the body, accompanied by tumefaction, and a burning and stinging pain in all cases. About the third day of the inflammation small blisters, filled with yellow serum, appear, which break about three days afterwards. On the fifth or sixth day they begin to dry, and on the seventh or eighth form crusts or scales, which desquamate, and a new skin forms. In phlegmonous erysipelas the inflammation involves not only the skin, but the subcutaneous tissues also, and the symptoms are all severer. It often assumes a very malignant type, and is then a disease of a most fatal character. It is liable to attack wounds; and those who are nursing patients suffering with erysipelas should never wait upon a woman who has been but recently confined, as she will be very liable to contract puerperal peritonitis, a very fatal disease.

Treatment.—Give a lobelia emetic, a mild purge, and a hot bath at the commencement. In the mild form cover the inflamed patch with collodion, and renew every two or three hours. The emetic and purge should be followed with quinine in two or three grain doses every three hours. The inflamed surface should also be washed with a decoction of the bark, or a solution of quinine. Bruised cranberries are a good application. Cloths wrung out of a hot decoction of white-oak bark and golden-seal should be applied to the inflamed part to prevent spreading. In wounds apply lint saturated with compound tincture of myrrh and capsicum. If the fever is violent, treat it as in all the febrile cases, and administer the following:—

Formula No. 1.

Sulphate Quinine	30 grains.
Extract of Belladonna	3 ,,

Mix. Make into 10 pills, and give one every six hours.

Formula No 2.

Chloride of Potash	2 drachms.
Muriate Tincture of Iron	3 ,,
Sulphate Quinine	30 grains.
Simple Syrup	1 ounce.
Water	3 ,,

Mix. *Dose.*—Teaspoonful every two or three hours.

CHOLERA MORBUS.

Symptom.—A violent vomiting and purging of bile, preceded by a pain in the stomach and bowels; quick, weak, and fluttering pulse; heat, thirst, cold sweats, hiccups, and sometimes death in a few hours.

Treatment.—Bladders or bottles containing hot water should be applied to the feet, and flannel cloths wrung out of hot spirits, or a mustard plaster be laid over the stomach. When it is supposed that the stomach is sufficiently cleared, give two grains of solid opium in a pill, and repeat half the quantity every few hours, as the case may require. If the weakness is very great, and the spasms so alarming as to cause a fear of the immediate result, the quantity of opium may be increased carefully. If the pill will not remain in the stomach, give eighty or ninety drops of laudanum in a tablespoonful of thin starch, by clyster, and repeat it as often as may be necessary. Fifty or sixty drops of laudanum in a small quantity of strong mint tea, or the effervescing draught, will frequently succeed in allaying the irritation. If all these means fail, apply a blister to the stomach. For thirst, give ice, a little at a time. To complete the recovery, and to guard against a second attack, a complete casing of flannel is requisite, together with the use of vegetable bitters and tonics. Persons subject to this disease should be cautious in their diet and avoid exposure to moist, cold air.

Any of the following may be given:—

FORMULA No. 1.

Chloral Hydrate	3 drachms.
Sulphate of Morphia . . .	4 grains.
Laurel Water	1 ounce.

Mix. From 15 to 20 minims injected under the skin hypodermically.

FORMULA No. 2.

Tincture of Camphor . . .	1½ ounce.
Tincture of Capsicum . . .	½ ,,
Spirits of Lavender Comp. . .	1 ,,
Tincture of Opium . . .	1 ,,

Mix. *Dose.*—From 20 to 40 drops, as may be needed.

TYPHOID FEVER.

This is a febrile disease, and very insidious in character, its commencement being scarcely perceptible. The patient has a sense of indisposition, but is unable to describe his condition; there is lassitude, headache, irregular chills, irritability of disposition, pain in back and limbs, looseness of bowels, as the disease advances, more or less delirium in severe cases; the tongue is but slightly coated, and the appetite often remains until the disease is fully developed. After the full development, a number of small vesicles, called sudaminæ, may be observed on the abdomen. They are small and may escape notice, unless carefully observed. On the fifth day after the occurrence of these, another eruption occurs, which consist of small red or purple spots, resembling flea bites. These spots are called petechiæ. If these are observed the disease is unmistakably typhoid fever.

Typhoid fever is often indicated by the thermometer, which often shows a temperature of 106° to 107°, when the case may be considered a very dangerous one.

Complications often greatly increase the severity of the attack, the most serious of which are pneumonia, inflammation of the parotid glands, mumps, etc. The duration of the disease is generally from two to four weeks.

Treatment.—If the bowels be costive give some gentle laxative, as rhubarb or castor oil. As soon as this has operated, or even before (if the weakness of the patient seem to require it), exhibit wine whey and beef tea, always remembering that if the strength of the patient be not supported by these means he may die of debility. Applying cold water gently over the body is a remedy in this disease of great value. If delirium or insensibility come on, shave the head and apply a blister to it, or cloths wrung out of iced vinegar and water. If a copious purging ensue, it must be stopped, or it will prove fatal; this may be done by the mixture of No. 1, or by opium. Musk mixture, No. 2, and the camphor mixture, No. 3, will also be found useful. Great reliance is sometimes placed upon the sulphate of quinine, which may be taken in doses of two or three grains four times a day, dissolved in a little gum arabic tea, or in pills.

The order of remedies, then, in typhoid fever, is to open the bowels with the mildest laxatives, to use wine or sometimes brandy, to apply cold water over the body, to give milk, chicken soup, jellies, tapioca, sago, etc.; to check purging, keep the room cool and clean, use the quinine mixture, one or all of the different mixtures of camphor or musk, and if the delirium come on to apply blisters to the head.

FORMULA No. 1.

Chalk Mixture	4 ounces.
Tincture of Kino	1 drachm.
Tincture Lavender Comp. . .	1 ,,
Laudanum	30 drops.

Dose.—A tablespoonful as may be required.

MUSK MIXTURE No. 2.

Musk	1 drachm.
Gum Arabic, Powdered . . .	1 ,,
Loaf Sugar	1 ,,
Water	6 ounces.

Rub up the musk, sugar, and gum arabic, adding the water very gradually. The dose is a tablespoonful every two hours.

CAMPHOR MIXTURE.

Camphor	30 grains.
Powdered Gum Arabic . . .	2 drachms.
Loaf Sugar	1⅓ ,,
Peppermint Water	6 ounces.

The gum arabic and sugar beat to a paste, add the camphor, and pour in the water gradually. The dose is a tablespoonful every two or three hours.

IN THE DELIRIUM OF TYPHOID.

Tartar Emetic . . .	1 to 2 grains.
Sulph. Morphia	1½ ,,
Cherry Laurel Water . . .	1 ounce.

Mix. Take a spoonful every two or three hours.

INFLAMMATION OF THE LUNGS—PNEUMONIA.

Symptoms.—Pains in the side, difficult breathing, a cough, at first dry, but soon accompanied by bloody phlegm, pain in the chest of a piercing or stabbing character, a rapid pulse, from 90 to 150 beats per minute; redness of cheek on the affected side; eruption upon the lips; a crackling sound heard upon placing the ear to the affected side.

Treatment.—Dr. Wells, of New York, states that in his practice *ergot* has yielded better results than any other treatment. In ten cases in which he employed this drug, the "rusty" sputa was speedily and permanently arrested, and the attack in half the cases averted; in others so shortened as to recover in six or seven days. Ergot will remove the intense congestion of the lungs, the cause of that rusty sputa.

The following is the prescription:—

Fluid Extract of Ergot	4 drachms.
Tincture of Digitalis	1 "
Acetate of Lead	6 grains.
Aqua Cinnamon ad.	2 ounces.

Mix. *Dose*—Tablespoonful every two hours, until bloody sputa stops; then twice a day.

Dr. Wells begins his treatment by administering large doses of quinine.

Carbonate of Ammonia	5 grains.
Tartar Emetic	$\frac{1}{6}$ "
Nitrate of Potassium	13 "
Chloroform	15 drops.

Mix. To be taken every four hours.

Every night and morning give—

Calomel	3 grains.
Opium	1 "

From the beginning to the end of the disease great benefit will be derived from hot fomentations.

Tincture Aconite Root	16 drops.
Syrup of Ipecac	2 drachms.
Syrup of Tolu, to make	4 ounces.

Mix. *Dose*—Half a teaspoonful every two or three hours to a child five years old.

DYSENTERY—COLITIS.

Symptoms.—Diarrhœa, chilliness, followed by fever, severe pain in the bowels, constant desire or stool, burning pains in the rectum, passages usually small in quantity, and composed of mucous mixed with blood, severe griping, sickness, and vomiting, a thread-like pulse, jaundice, headache, tongue at first white, afterwards smooth and slimy, and inability to sleep.

Formula No. 1.

Nitric Acid	8 drops.
Tincture of Opium	40 "
Camphor Water	8 ounces.

Mix. *Dose*—One teaspoonful, several times a day.

Formula No. 2.

Syrup of Acacia	2 ounces.
Subnitrate of Bismuth	2 drachms.
Tincture of Opium	2 "
Oil of Turpentine	$1\frac{1}{2}$ "
Peppermint Water	2 ounces.

Mix. *Dose*—Teaspoonful every three hours.

Formula No. 3.

Chloral Hydrate	5 grains.
Starch Gruel	2 ounces.

Mix. Throw it into the rectum, and repeat as often as necessary.

Formula No. 4.

Powdered Ipecac	$1\frac{1}{2}$ drachm.
Fluid Extract Gelseminum	12 drops.
Calomel	10 grains.
Sulphate of Morphia	$1\frac{1}{2}$ "

Mix. Divide into twelve waters. *Dose*—One every two hours.

PLEURISY.

Symptoms.—Chilliness, fever, sharp pain or stitch in the affected side, generally located below the nipple; cough, lying on the affected side and motion increases the pain. The cough is short and dry, though a little frothy mucous may be expectorated; hard breathing, urine scanty and high coloured.

Treatment.—Commence with a mild cathartic and encourage sweating; confine your patient to bed; hot fomentations to the seat of pain.

Formula No. 1.

Iodide of Potassium	1 drachm.
Water	4 ounces.

Mix. *Dose*—Tablespoonful three times a day.

Formula No 2.

Citrate of Iron and Quinine	640 grains.
Simple Elixir	1 pint.

Dose—Teaspoonful three times a day.

CHOLERA INFANTUM—SUMMER COMPLAINT.

Symptoms.—Vomiting and diarrhœa, stomach irritable, vomiting immediately after drinking; the matter vomited is tinged with bile and presents a greenish hue. The discharge from the bowels consists of a colourless, or sometimes greenish, inodorous and watery fluid; occasionally with shreds of mucous mixed with it; stools without effort; considerable pain; plaintive cry; extreme languor and prostration and very rapid emaciation.

Formula No. 1—for Diarrhœa.

Subnitrate of Bismuth	3 grains.
Calomel	$\frac{1}{6}$ "
Acetate of Lead	$\frac{1}{2}$ "
Creta Preparata	3 "

Mix. Administer the above dose twice a day.

Formula No. 2—for Vomiting.

Acetate of Lead	5 grains.
Acetic Acid	5 drops.
Water	2 ounces.

Mix. *Dose*—Teaspoonful often repeated.

FORMULA NO. 3—FOR GRIPING.

Mucilage of Acacia	3 ounces.
Pure White Sugar	3 drachms.
Spirits of Turpentine	2 „
Calcined Magnesia	15 grains.

Mix. *Dose.*—Teaspoonful every three or four hours.

DROPSY.

Symptoms.—Abdomen enlarged, skin tense and shiny; a sensation of fluid when felt by the hand, short breath, swelling of the lower extremities, sleeplessness, inability to lie down on account of disturbed breathing, weakness, emaciation.

FORMULA NO. 1.

Extract of Conium	1 drachm.
Powdered Cantharides	40 grains.
Hydrarg. Submur.	30 „
Powdered Ipecac	20 „

Mix. Make forty pills. *Dose.*—Take one three or four times a day.

FORMULA NO. 2.

Extract of Taraxacum	½ ounce.
Carbonate of Soda	2 drachms.
Tartrate Potassa	6 „
Tincture of Rhubarb	8 „
Tincture of Henbane	1½ ounce.
Infusion of Dandelion	8 „

Mix. *Dose.*—Tablespoonful every two hours.

FORMULA NO. 3.

Acetate Potassa	1½ drachm.
Extract of Foxglove	6 grains.
Vinegar of Squill	2 drachms.
Syrup of Ginger	6 „
Water	2 ounces.

Mix. *Dose.*—Teaspoonful every three hours. The above will be found useful in dropsy following scarlatina.

FORMULA NO. 4.

Powdered Jalap	50 grains.
Gamboge	30 „
Podophyllin	20 „
Elaterium	12 „
Aloes	30 „
Cayenne	35 „

Mix. Form into a pill mass by using thick mucilage, and make pills of three grains each. *Dose.*—One pill every two days.

BAD BREATH.

Scarcely anything is more disagreeable than bad breath. The real cause of bad breath may generally be traced to a diseased stomach or decayed teeth. When the former is the case, mild aperients should be administered, and if these do not succeed, an emetic may be given followed by an occasional dose of abernethy medicines. When rotten teeth are the cause they should be thoroughly cleaned and then stopped; or better still, have them removed. In other portions of this work very excellent formulas are given for mouth washes. Ordinarily a little chlorate of potash or tannic acid in the form of a mouth wash will be found serviceable.

HOW TO CURE A COLD—CATARRH.

This treatment refers to that particular form of cold characterised by running from the nose and eyes, accompanied with fever. We base our treatment on the principle of restoring the natural functions of the skin, which a chilling wind or other atmospheric influence, or persons with lowered vitality, has wholly or partially suppressed.

Give small doses of morphia and antimony every three or four hours, until the sneezing and defluxion cease, which, with ordinary precaution, results after the third or fourth dose. Our formula is as follows:

Morphia, P.B.	40 minims.
Wine of Antimony	30 „
Citrate of Potass.	40 grains.
Syrup of Orange Peel	3 drachms.
Water, sufficient to make	5 ounces.

Mix. *Dose.*—Take two spoonfuls every three or four hours.

CONSUMPTION.

Consumption is one of the most common and greatly dreaded of all constitutional diseases. Its approach is frequently insidious, and its development, though often slow, is sure and certain, unless arrested in the earlier stages.

Causes.—It may be inherited, like scrofula, or it may occur as a subsequent form of that disease. It may also be occasioned by a too rapid growth among the young, scanty and improper food, improper dressing, damp dwellings, want of outdoor exercise, severe exposure, neglect of slight colds, and in women, frequent child-bearing and nursing.

Symptoms.—The disease develops, most frequently, between the ages of fifteen and thirty, and is characterised by deposits on tubercles among the tissues and organs; most generally the lungs. It does not manifest itself by any positive symptom at first, and there may be noticed little more than an imperfect nutrition and a general debility. As the disease advances, the symptoms become more marked: frequently there is a dry, hacking cough (though in some cases this may be wanting); the voice grows husky, there is a shortness of breath and tenderness of the lungs; the expectoration consists of lumpy, calcareous matter, frequently streaked with blood; the digestive functions become impaired, and diarrhœa occurs, the pulse is frequent and feeble, with dryness of the skin, and, often, a slight fever, followed by night-sweats. These symptoms usually precede the third, or ulcerative stage, by which time, it is often too late for successful treatment of the disease.

Treatment.—Cases of suspected, or established consumption should be promptly placed under the charge of the family physician, and should command his greatest care and skill. When this is done in time, his efforts may be rewarded with the prolongation of the patient's life, and possibly, by his final restoration to perfect health. While this is true, it is equally true, and just as important, that all known means be adopted to prevent the inception of the disease.

First, forbidding the marriage of persons suspected of scrofulous, or consumptive tendencies. Second, by paying attention to the correct development of childhood, and insisting that physical laws are properly obeyed by the young; allowing them proper food and clothing, moderate study, and sufficient exercise in the open air. The uterine system of girls should receive the attention of mothers it frequently requires, and a prompt veto placed on much of the nonsense composing the supposed requirements of "society."

Third, if, in spite of all precautions, the disease seems likely to develop, a change of climate will often be found beneficial, if not absolutely necessary; and in no case should there be any delay. A dry, salubrious atmosphere will prove the best. Such can generally be found at an altitude of from 2,000 to 5,000 feet above the sea level. At a greater elevation than this, the atmosphere is too light, and the change would frequently be for the worse.

COLIC.

Symptoms.—Griping, tearing, gnawing, or shooting pain in the bowels; chiefly confined to the region of the navel, generally attended with painful distension of the belly, with spasmodic contraction, sometimes vomiting, with looseness of the bowels.

FORMULA No. 1.

Tincture of Opium . . .	2 drachms.
Spirits of Camphor . . .	½ ounce.
Tincture of Capsicum . .	⅓ "
Tincture of Ginger . . .	1 "
Essence of Peppermint . .	2 "
Hoffman's Anodyne . . .	2 "

Mix. *Dose.*—Ten to twenty drops every 20 minutes.

FORMULA No. 2.

Chloroform	3 drachms.
Tincture of Camphor . . .	1 ounce.
Tannic Acid	½ "
Sulph. Morphia	1½ grain.

Mix. *Dose.*—Teaspoonful, in water or syrup, every hour, or oftener if needed, till pain ceases.

In printers' and painters' colic, use either of the foregoing formulæ, and apply, externally, the following liniment freely, over the abdomen.

FORMULA No. 3.

Chloroform	1 drachm.
Tincture of Aconite . .	1 "
Tincture of Opium . .	1 "
Soap Liniment . . .	3 "

Mix.

FORMULA No. 4.

To eliminate lead from the system, employ tincture of iodine, 1 oz. Drop ten drops in wineglass of cold water, and take three times a day.

DIPHTHERIA.

Symptoms.—Slight fever, dryness in the throat, with slight pain on swallowing, glands of throat swollen, lassitude, headache, loss of appetite, chills, quick pulse, a furred tongue, a hot, dry and pungent skin, mind confused, one or more whitish patches in the throat, breath offensive.

Cause.—The immediate exciting cause of this disease seems to be a vast number of minute organisms or germs, which find ready access to the throat and cavity of the nose, during the act of respiration. It is the enormous number of these germs, and their extraordinary activity, which gives to diphtheria its dangerous character.

Treatment.—Dr. Baynes says, in *Canada Medical Record*: "In the first place, a very important part of any treatment is, when examining the throat, not to weary your patient. The patient should be kept quiet, *never* use a brush or swab to apply a solution to the throat. Not only are they very disagreeable to the patient, but if you brush off the membrane you simply leave a raw surface, and it will necessarily take deeper root. I have no hesitation in saying that the patient stands a better chance for life if not treated at all, than if he has his throat swabbed or brushed out.

"The best means of applying a solution to the throat is by means of an atomizer. The tube is put in the mouth, and a few squeezes of the ball ensures a complete coating of all parts of the throat."

FORMULA No. 1.

Lactic Acid	4 drachms.
Lime Water	8 ounces.

Mix, and apply by means of the atomizer.

If the nares (nose) are involved, syringe the passages every two or three hours.

The diet should consist of milk, to which add a little lime water, beef tea, beef juice, eggs beaten up with milk. Drink lemonade.

FORMULA No. 2.

Bromine	5 grains.
Bromide of Potassium . . .	2 "
Water	1 ounce.

Mix. Apply by means of atomizer.

FORMULA No. 3.

Hyposulphite of Soda . . .	1 drachm.
Chlorate of Potass. . . .	2 "
Muriate Tincture of Iron . .	3 "
Sulphate of Quinine . . .	15 grains.
Water	4 ounces.

Mix. Teaspoonful every two hours, and drink no water for some time after.

FORMULA No. 4.

Bisulphate Soda	4 drachms.
Tincture of Orange Flowers . .	1 ounce.
Water	4 "

Mix. Give a child a teaspoonful, and a grown person a tablespoonful.

JAUNDICE.

Symptoms.—The most prominent symptoms of this disease are yellowness of the skin and whites of the eyes, saffron-coloured urine, and whitish or clay-coloured stools; also, impaired appetite, a loathing of food, the sourness of stomach, sometimes sickness and vomiting, a bitter taste in the mouth, disinclination to move about, sleeplessness, a dull pain in the right side, which is increased by pressure.

Treatment.—Stimulate the liver to action by the application of an irritating plaster over the region of the liver, and give the following—

FORMULA.

Nitro-Muriatic Acid	2 drachms.
Ext. of Dandelion	½ ounce.
Spirits of Chloroform	1½ drachm.
Water	8 ounces.

Dose.—Two tablespoonfuls three times a day.

SCARLET FEVER.

Symptoms.—The disease begins with nausea, vomiting, convulsions, fever, tongue coated, lassitude, headache.

On the second day the eruption appears in the form of numerous minute dots of a bright scarlet colour, which rapidly run together, and soon cover the whole body.

Scarlet fever has not till recently been recognised as an intensely contagious and infectious disease. The first symptoms of this malady is observed from four to seven days after exposure. The tongue has a strawberry colour, and throat exhibits inflammatory symptoms. The glands under the jaw are swollen.

This complaint is difficult to manage, and always requires the presence of a physician. Its complications are numerous, among which may be noticed inflammation of the ears, inflammation of the bowels and joints, kidneys affected, giving rise to dropsy. It is very fatal to young children.

The following will show the difference between scarlet fever and measles:—

In Scarlet Fever.

The eruption is bright scarlet.
It appears on the second day.
Is quite smooth to the touch.
Is in small round spots.
Disappears on pressure.
The face is quite dry.

In Measles.

The eruption is dark-red colour.
Does not appear till the fourth day.
Is larger and crescent-shaped.
Does not disappear.
Face swelled; running from the eyes and nose.

Treatment.—This should be cooling in its nature, cooling drinks, sponging with cold water, etc. In ordinary cases little more is required, excepting a few drops of tincture of belladonna may be given several times per day. When high fever exists, give the remedies advised in measles. Hot foot-baths are advisable. As this is a prostrative disease, beef tea and the ordinary stimulants should be given from the first. What is called malignant scarlet fever is only a severer form than the above. Gargles of sage and cayenne pepper are used to allay the throat affections. The abscesses in the region of the ear, and consequent deafness, can be obviated by subduing the inflammation of that part by the usual methods.

The following have been found useful:—

IN SCARLATINA.

Chlorate of Potass	10 grains.
Tinct. Muriate of Iron	5 drops.
Syrup of Ginger	1 drachm.
Water	½ ounce.

Mix. Take every four to six hours, for a child from 8 to 10 years.

PREVENTION OF PITTING IN SMALL-POX.

There are many applications to prevent pitting in cases of small-pox, but none from which I have derived such manifest good results as from linseed meal poultices, assiduously applied to the face from the moment the eruption shows itself until the fever begins to decline. Among the many advantages that the poultices possess over other applications, is the by no means unimportant one, of softening and determining to the skin, and thus aiding the development of the pustules, and in this way relieving the system of the strain placed upon it. Any one who has seen much of small-pox, must have learned to look with anxiety for the appearance of well thrown up pustules on the face, knowing well the likelihood of a co-incident relief to respiration and decline of temperature. This the poultices hasten—I had almost said effect; while, more than this, they exclude the light and completely prevent subsequent pitting. My mode of proceeding has always been to have a saucepan with linseed meal and water on the fire in the bedroom, and as soon as the poultices dry on the patient's face—and this in severe cases they do very speedily—I direct the attendants to take some of the linseed meal paste from the saucepan and apply it as a fresh poultice. In this way the poultice is always ready. It may be said that this application would be offensive; but let anyone try it in a really serious case of commencing confluent small-pox, where the skin of the face burns with the deterioration of blood caused by the effort to throw out the eruption, and I am sure that however disagreeable it may appear in description, in practice it gives almost heavenly relief. I do not question the advisability of bathing the face with a carbolic wash between each poultice; but contrasted with the poultice application, I doubt if carbolic acid alone would be equally satisfactory.

SMALL-POX—VARIOLA.

The symptoms are divided into four periods. The period of invasion occupies about three days, and is marked by languor, lassitude, restlessness, stretching, gaping, petulance, sullen mood; these are followed by chills and rigours. Towards evening the skin becomes hot and dry, pain attacks the head, loss of appetite, nausea, and frequently lumbago. On the third day, heat, fever, flushed face, headache, and in children sometimes convulsions. The period of eruption commences on the fourth day (often on the third), with the appearance of a series of small red circular points (papulæ). They do not rise above the surface then, but can be seen in it and felt by the finger. They are situated in the substance of the skin, and roll about under the finger, the size that of a small pin's head. These gradually enlarge, the patient in the meantime suffering severely, until the period of suppuration arrives. The fever is now great, the hands, feet and face swell, and salivation is profuse and constant. There is hoarseness and pain, and the saliva emits a most disagreeable odour. Then comes the period of recovery. The pustules scab, the fever and other unpleasant symptoms gradually disappear, and, if all goes right, the danger is over from the twelfth to the fifteenth day after the eruption.

What is known as *confluent* small-pox is when the pustules are very numerous and running together; and when all the symptoms are very severe, the disease is known as *malignant*. Variola patients emit a peculiar fetid odour, which is characteristic, and distinguishes it from Varioloid.

Treatment.—An active purge should be given at the outset and the patient kept in bed. Give such food as is easy of digestion.

As the disease cannot be broken up by any known remedy, my plan of treatment consists in painting every part of the skin where the eruption appears with one part of carbolic acid dissolved in from eleven to fifteen parts of glycerine, and repeating the application night and morning. The urine must be watched with great care, as it often happens that the carbolic acid becomes absorbed and makes its presence known in the urine by giving the fluid a dark smoky appearance. If this be observed, the application must be made less frequently, or a weaker solution of the acid employed, as it may act too severely as a depressing agent, though I never knew this actually to result from the use of even the more concentrated solution.

The employment of carbolic acid in this way has other advantages besides those already mentioned. It acts as a disinfectant, and it prevents pitting to a very great extent. The latter effect is due to the fact that suppuration does not run the same lengthened course as it does when no carbolic acid is employed, and thus the skin is not destroyed to such a depth as it would otherwise be. I could enumerate many of my patients who have suffered from what might have been called very severe attacks of small-pox, and yet now they present not the slightest trace of having had the disease.

TONSILLITIS—QUINSY.

Symptoms.—This is an inflammation of the tonsils. It is usually accompanied with acute inflammation of the pharynx or soft palate, and hence is accompanied with nearly all the symptoms mentioned as characteristic of the latter affliction. On account of the more extensive swelling of the tonsils, there is much greater pain than usually accompanies a common catarrh. There is a constant disposition to swallow in order to free the fauces from a tenacious colourless mucus which adheres to that part. From the commencement there is fever, severe headache and a rapid pulse. The termination is usually an abscess, which at length opens, and a discharge of very fœtid pus ensues, which affords relief. The duration of the disease is usually about a week, and is scarcely ever fatal.

Treatment.—During the first stage of the disease benefit may be derived from holding pieces of ice in the throat and packing the throat with pounded ice wrapped in a towel. Inhalation of steam and hot fomentations applied to the throat instead of the ice-pack.

FORMULA No. 1.

Alum	20 grains.
Tannic Acid	20 ,,
Sulphate of Zinc . . .	20 ,,
Sulphate of Copper . .	30 ,,
Water	1 ounce.

Mix. Inhale the vapour or use in an atomizer

FORMULA No. 2.

Tannic Acid . . .	6 drachms.
Gallic Acid	2 ,,
Water	1 ounce.

Mix. Use as a gargle.

FORMULA No. 3.

Liquor Permanganate of Potash .	1 drachm.
Distilled Water	10 ounces.

Mix. As a gargle.

CHOLERA INFANTUM.

Symptoms.—This is a complaint which usually attacks children between the ages of two months and three years; it occurs in the warm season, and is chiefly confined to cities. It is very fatal. It commences with a profuse diarrhœa, stools thin and variously coloured. The stomach becomes irritable, and rejects everything. Loss of flesh, languor and prostration follow, and stools become colourless and odourless; skin is dry and harsh, head and belly hot; thirst is great, and fever at nightfall. Delirium is present in many cases, indicated by violent tossing of the head, etc.

Treatment.—The child should be removed to a vicinity abounding in pure air, if possible; otherwise, in a large and airy room, and may even be taken into the open air occasionally. Its food should consist of the farinaceous articles of diet, if weaned; otherwise, of its mother's milk; mucilaginous drinks can also be given. If vomiting be obstinate, give camphor or a little opium, or combined, as in paregoric. The astringents must be given to check the diarrhœa. Rhubarb is a good remedy. Charcoal is the proper remedy when the stools are very offensive.

Any of the following formulæ will be found serviceable:—

FORMULA No. 1.

Nitrate of Silver . . .	1 grain.
Dilute Nitric Acid . . .	8 drops.
Deodorised Tinct. of Opium .	8 ,,
Mucilage of Acacia . . .	½ ounce.
Simple Syrup	½ ,,
Cinnamon Water . . .	1 ,,

Mix. *Dose.*—Teaspoonful every three, four or six hours, to a child one year old.

FORMULA No. 2.

Sulphate of Copper	1 grain.
Deodorised Tinct. of Opium	8 drops.
Water	4 ounces.

Mix. *Dose.*—Teaspoonful every two, three, or four hours.

FACE ACHE OR FACIAL NEURALGIA.

Symptoms.—This is one of the most common forms of neuralgia. The pain is usually confined to one side of the face. It may be excited by cold, by decayed teeth, or by causes which are unknown. In some cases the pain is attended by contraction of the muscles of one side of the face, when it is termed tic douloureux. This form of disease generally occurs in persons considerably advanced in years.

Treatment.—Hot applications to the face together with hot foot- or sitz-bath and the use of electricity, are the most useful measures. The application of cold to the seat of pain sometimes gives relief, when hot applications are ineffectual. Sometimes an injection of a few drops of chloroform beneath the skin, just in front of the ear, has proved of great value. The following formulæ for this distressing complaint will be found valuable :—

FORMULA No. 1.

Extract of Hyoscyamus	15 grains.
Extract of Stramonium	4 ,,
Extract of Humulus	1 drachm.
Sulphate of Morphia	1½ grain.

Mix. Divide into 30 pills.

Dose.—One every half-hour till relief is felt.

FORMULA No. 2

Sulphate of Quinine	40 grains.
Sulphate of Morphia	10 ,,

Make 30 pills.

Dose.—One as often as may be required.

FORMULA No. 3.

Extract of Hyoscyamus	30 grains.
Sulphate of Morphia	3 ,,
Strychnia	1 ,,
Powdered Capsicum	30 ,,
Sulphate of Zinc	15 ,,

Mix. Make 30 pills.

Dose.—Take one three or four times a day.

DIARRHŒA.

Is a purging looseness of the bowels. The causes of diarrhœa are various, but among the most common are the presence of irritating matter, worms, or acidity of the stomach or bowels, and exposure to cold, especially cold to the feet or sudden changes of climate or temperature.

Treatment.—In general, it will be proper to administer a mild aperient, for which purpose rhubarb or castor oil is usually preferred. The dose of the first may be from 20 to 30 grains, in sugar, or made into a pill: that of the second from 2 to 4 teaspoonfuls, with a little peppermint water. After due operation of this medicine, opium astringents may be taken with advantage, but not in excessive doses, as is commonly the practice.

The first and second are indicated when great irritability exists, and the third in cases arising from the presence of acidity.

In bilious diarrhœa, characterised by the bright yellow brown colour of the dejections, a dose of blue pill or calomel, assisted by mild dilutants and demulcents, and warmth generally proves efficacious. Small doses of opium are also useful in some cases.

The following formulæ will be found good :—

FORMULA No. 1.

Subnitrate of Bismuth	2 drachms.
Dilute Hydrocyanic Acid	½ ,,
Mucilage of Acacia	2 ounces.
Peppermint Water	2 ,,

Mix. *Dose.*—Tablespoonful, three times a day.

FORMULA No. 2.

Subnitrate of Bismuth	20 grains.
Mucilage of Tragacanth	½ ounce.
Tincture of Cinnamon	10 drops.
Water	1 ounce.

Mix. Take at one dose.

FORMULA No 3.

Subnitrate of Bismuth	80 grains.
Paregoric	2 drachms.
Chalk, Mixture to make	2 ounces.

Mix. *Dose.*—Teaspoonful to a child.

BRONCHITIS.

This is an inflammation of the mucous lining of the bronchia or smaller ramifications of the windpipe. In its milder form it is popularly called a cold on the chest.

Symptoms. The usual symptoms are hoarseness, dry cough, and a slight degree of fever, followed by expectorations of mucus, at first thin and afterwards thick and copious. In the severer form there is more fever, cough, and oppression at the chest.

Treatment.—It generally yields to small and repeated doses of ipecacuanha and antimonial diaphoretics, a light and mild purgative being at the same time adopted, but in every case it is safer to have recourse to medical aid.

FORMULA No. 1.

Sulph. Morphia	3 grains.
Tinct. Sanguinaria	½ ounce.
Wine of Ipecac	½ ,,
Syrup of Wild Cherry	5 ,,

Mix. *Dose.*—Teaspoonful, twice or three times a day.

FORMULA No. 2.

Wine of Antimony	½ ounce.
Syrup of Tolu	½ ,,
Syrup of Squills	½ ,,
Mucilage of Acacia	2 ,,

Mix. *Dose.*—Teaspoonful, two or three times a day.

FORMULA No. 3.

Compound Spirits Ether	1 ounce.
Syrup of Squills	1½ ,,
Solution of Morphia	1 ,,
Camphor Water	1 ,,
Mucilage of Acacia	1 ,,

Mix. *Dose.*—Teaspoonful, to a tablespoonful, according to the severity of the attack.

RHEUMATISM.

This very painful affliction is most frequently brought on by exposure to wet and cold, after violent and fatiguing exercise of the muscles. There are two forms of this complaint, the *acute* and *chronic.*

Symptoms.—Acute rheumatism is ushered in by slight chilliness, followed by fever, pain in one or more joints, most frequently in the knee, ankle, wrist, or shoulder, which increases rapidly and becomes very severe; great tenderness of the affected joints, pain greatly increased by motion, pulse 90 to 100 a minute, considerable thirst, tongue coated.

The chronic form may follow the acute, but is more often an independent disease; the fingers and limbs are often rendered useless by the great distortion. It is said to be due to the presence of lactic acid in the blood.

FORMULA No. 1.

Vin. Colchicum	½ ounce.
Powdered Nitrate of Potash	1½ drachm.
Syrup of Morphia	1 ounce.
Syrup of Tolu	3 ,,

Mix. *Dose.*—Teaspoonful every five hours.

FORMULA No. 2.

Salicylic Acid	80 grains.
Acetate of Potassium	160 ,,
Glycerine	½ ounce.
Water	2 ,,

Mix. *Dose.*—Teaspoonful, four times a day.

FORMULA No. 3.

Salicylic Acid	20 grains.
Bicarbonate of Soda	20 ,,
Water	1 ounce.

Mix. Take at one dose.

FORMULA No. 4.

Salicylic Acid	2 drachms.
Solution of Acetate Ammonium	2 ounces.
Water	6 ,,

Dose.—Tablespoonful, often repeated.

CONVULSIONS.

Symptoms.—Spasmodic contraction of the muscles producing motions of the limbs, generally accompanied with unconsciousness.

Convulsions occur at all periods of life, but in adults they are only symptoms of other diseases. In children they are very common. They are of frequent occurrence in teething; and a swollen and inflamed state of the gums is said to excite them; they may be brought on by improper food, such as the milk of a nurse suffering from some violent emotion. At the siege of Berlin, nearly all the suckling children died of convulsions. They may also be induced by feverish attacks, whooping cough, strong purgatives, or suppressed eruptions.

Treatment.—In the case of a dangerous attack of convulsions no time should be lost in sending for a medical practitioner. Pending his arrival the patient should be placed as promptly as possible in a hot water bath. A better plan is to loosen all the dress, to place the child across the arms and sway it up and down gently, and to allow cool air to play on the face and chest; give an injection of soap and warm water and apply mustard plasters, for a few seconds only, to the pit of the stomach; if these fail to give relief, apply cold water to the head and leeches to the temples. Lance the gums if inflamed. When the fit is over keep the head cool.

The following will be found valuable remedies in convulsions.

FORMULA No. 1.

Bromidia	1 ounce.

Dose.—For an adult, one-half teaspoonful every twenty minutes; and for a child, from 5 to 15 drops every hour.

FORMULA No. 2.

Bromide of Ammonia	2 drachms.
Bromide of Potassium	½ ounce.
Syrup of Ginger	1 ,,
Water	2 ,,

Mix. *Dose.*—One teaspoonful, diluted.

CROUP.

Symptoms.—A permanent laborious and suffocating breathing, accompanied by wheezing, cough, a peculiar shrillness of the voice, and more or less expectoration of purulent matter, which continually threatens suffocation. There are two varieties, *acute* and *chronic.* The latter is very rare.

Treatment.—An early and effective emetic is indicated in all cases (Formula No. 1); flaxseed poultice to the throat, inhalation of vapour from hot water and mullein leaves is of great service. The bowels should be kept regular.

FORMULA No. 1.

Tartar Emetic	1½ grain.
Syrup of Ipecacuanha	1 ounce.
Water	2 ,,

Mix. *Dose.*—Teaspoonful every ten minutes till vomiting ensues. Repeat as often as may be deemed necessary.

FORMULA No. 2.

Oil Stillingia	1 drachm.
Oil Cajeput	1 ,,
Tinct. Lobelia	½ ,,
Tinct. Lavender	½ ,,
Oil Cinnamon	10 drops.
Alcohol	1 ounce.

Dose.—One to two drops on sugar.

ON THE TREATMENT OF THE MORE COMMON FORMS OF SKIN DISEASES.

Eczema (*An Eruption on the Skin*).—Is by far the most common disease met with, both in its acute and chronic forms. The local treatment I have found most efficacious, consists in keeping the affected part moist, with lint or linen saturated in a very weak alkaline solution, consisting of soda subcarb., ½ drachm to a pint of water. For this purpose it is necessary to cover the moistened lint with oil silk, or gutta-percha sheeting, which should well overlap the lint below, so as to prevent evaporation. The usual effect is soon to remove all local irritation, and especially the itching or smarting so distressing to the patient; to keep the surface clean and prevent the accumulation of those scabs and crusts, which in themselves often tend to keep up the disease. After a time, even the indurated parts begin to soften, the margins of the eruption lose their fiery red colour, and merge into that of the healthy skin, and, finally, the whole surface assumes its normal character.

Herpes (*Ringworm, Shingles, and the like*).—This disease generally runs its course in about fifteen days, and requires no treatment whatever, further than an acetate of lead lotion to allay the smarting. It is not very common.

Scabies (*Itch*).—Occurs very frequently, and is cured by a host of remedies. A strong lather, of common soft soap and warm water, twice a day answers very well. The question with scabies, is not what remedy is useful, but which will cure it in the shortest period. The most extensive experience has shown that the sulphur and alkaline cures itch, on an average, in seven days. That sulphur, however, is not the active remedy, I have satisfied myself, by experiment. Soft soap, as we have seen, which contains alkali, and even simple lard, if pains be taken to keep the parts constantly covered with it, will cure the disease as soon as sulphur ointment.

Pemphigus.—This is rather a rare disease, and when chronic, coming out in successive crops, is very rebellious. Two cases were cured in a few weeks by the weak alkaline wash, applied as in the case of eczema, combined with generous diet.

IMPETIGO—A PUSTULAR ERUPTION.

This affection in all its forms is very common, and is best treated by the weak alkaline wash, exactly the same as in eczema. In the chronic forms which attack the chin of men, constituting one of the varieties of mentagra, the same treatment cures the most rebellious cases if the moisture be constantly preserved. For this purpose the hair must be cautiously cut short with sharp scissors, and the razor carefully avoided. If the side of the cheek covered with the whisker is attacked, removal of the hair from thence also is essential to the treatment. A bag or covering accurately adapted to the part affected must be made of gutta-percha sheeting, and tied on with strings. This may be covered with black silk, to allow the individual to go about and carry on his usual occupations. In this way I have frequently seen chronic impetigo of the chin, of from eight to ten years' standing, completely removed in a few weeks. But then the surface must be kept *constantly* moist, a circumstance requiring very great care and determination on the part of the patient. When it becomes necessary to shave, flour and warm water, or paste should be used, and not soap. Alkalies applied from time to time only, as in the form of wash or soap, always irritate, although, when employed continuously, they are soothing.

Etchyma (*Large Round Pimples inflamed at the Base*).—Is not a common disease, and usually presents itself, as the *E. cacheticum*, requiring in addition to the alkaline wash locally, a generous diet.

Acne.—Is a disease always requiring constitutional rather than local remedies. Although not uncommon in private, it is rare in hospital practice. Careful regulation of the diet, abstinence from wine and stimulating articles of food, watering-places, baths, etc., etc., constitute the appropriate treatment.

Rupia.—This disease I have never seen occur but in individuals who have been subjected to the influence of mercurial poisoning. Hydriodate of potassium and tonic remedies, with careful avoidance of mercury in all its forms, is the treatment I have found most successful.

Lichen and Prurigo (*A Cutaneous Eruption of a Pricking and Tingling Nature*).—In both these affections constant inunction with lard is as beneficial as constant moisture in the eczematous and impetiginous disorders. In the prurigo of aged persons, the Ung. Hyd. Precip. Alb. is a useful application, although the disease is not unfrequently so rebellious as only to admit of palliation. The chronic papular diseases often constitute the despair of the physician.

Psoriasis, and that modification of it known as *Lepra*—are very common diseases, and are uniformly treated by me externally with pitch ointment. I have satisfied myself, by careful trials, that it is the pitch applied to the part that is the beneficial agent, as I have given pitch pills, and infusion of pitch, largely internally without benefit. With the hope of obtaining a less disagreeable remedy, I have frequently tried creosote, and naphtha ointment and washes, but also without benefit. Lastly, I have caused simple lard to be rubbed in for a lengthened time, but without doing the slightest good. The oil of cade is also very useful, especially in psoriasis of the scalp. Internally, I give five drops each of Fowler's solution, and of the tr. cantharides. It is rare that the internal treatment alone produces any effect on a case of psoriasis of any standing. If a case resists this conjoined external and internal treatment, I have always found it incurable.

Lupus (*A Sort of Cancer*).—Is a constitutional disease, and must be treated by cod-liver oil, and all those remedies useful in scrofula, of which it is a local manifestation. The external treatment is surgical, consisting of the occasional application of caustics, red lotion, ointments, etc., according to the appearance of the sore.

Favus (*A Pustular Disease of the Scalp*).—Is a very common disease, and is most readily removed, first, by poulticing the crusts till they fall off, and the skin presents a smooth, clean surface; secondly, by shaving the hair; and thirdly, by keeping the scalp continually covered with oil, so as to exclude the atmosphere and prevent the growth of the parasitic fungi, which constitutes the disease. For this purpose, a gutta-percha or oil silk cap must be constantly worn. A continuance of this treatment for six weeks produces a cure in young persons combined with cod liver oil, generous diet, and anti-scrofulous remedies internally. I have tried the lotion of sulphurous acid and found it successful in a few cases, but the treatment by oil is so easy as to be far preferable to it. Very chronic cases are cured with difficulty, but so long as the oil is applied the disease never returns, and mere freedom from the disgusting crusts is a great gain.

Scalp Diseases must be treated according as it depends on eczema, impetigo, psoriasis, or favus, in all cases first removing the crusts with poultices, then keeping the head shaved, and, lastly, applying alkaline washes, pitch ointment, or oil, according to the directions formerly given. Ringworm is a disease I have never seen in Edinburgh, and of what it consists I am ignorant. Some writers apparently consider it to be favus, and others a form of herpes. On one or two occasions I have seen a scaly disease of the scalp, in the form of a ring—that is lepra, which I have cured by pitch ointment, or oil of cade. My friend, Dr. Andrew Wood, informed me some time ago, that he banished it from the Heriot's Hospital school by condensing on the eruption the fumes of coarse brown paper, and thus causing an empyreumatic oil or kind of tar, to fall upon the part. This has led me to suppose that it is a scaly disease, and a form of lepra or psoriasis.

So-called *syphilitic diseases* of the skin are, in my opinion, the various disorders already alluded to, modified by occurring in individuals who have suffered for periods more or less long from the poisonous action of mercury. A longer time will be required for their cure, but the same remedies locally, conjoined with hydriodate of potassium, in smaller doses, with bitter infusions, tonics, and a regulated diet, offers the best chance of success.

The great difficulty in the treatment of skin diseases generally consist in their having been mismanaged in the early stages—a circumstance I attribute to their not having, until a recent period, been much studied by clinical students. Many chronic cases of eczema are continually coming under my notice, which, in their acute forms, have been treated by citrine ointment, or other irritating applications, which invariably exasperate the disorder. I shall not easily forget the case of one gentleman, covered all over with acute eczema, who had suffered excessive torture from its having been mistaken for psoriasis, and rubbed for some time with pitch ointment. In the same way I have seen simple herpes, which would have readily got well if left to itself, converted into an ulcerative sore, by the use of mercurial ointment. Nothing is more common than to confound chronic eczema of the scalp with favus, although the microscope furnishes us with the most exact means of diagnosis. I need scarcely say that the correct application of the remedies I have spoken of can only be secured by accurate discrimination, in the first instance, of the diseases to which they are applicable.

The general constitutional treatment in all these cases seldom demands aperient or lowering remedies except in young and robust individuals with febrile systems. In a great majority of cases, cod-liver oil, good diet, and tonics are required. In a few instances, sedatives, both locally and internally, are necessary to overcome excessive itching and irritation. These the judicious practitioner will readily understand how to apply according to circumstances.

DISEASES OF THE NERVOUS SYSTEM.

INFLAMMATION OF THE BRAIN—CEREBRITIS.

This consists of inflammation of the cerebral substance, and due to long exposure to a vertical sun, the inordinate use of ardents spirits, cold, fright, external injury, the sudden disappearance of an old discharge, and it sometimes occurs as a consequent on small-pox, or erysipelas of the face and scalp, and fevers. The symptoms are violent inflammatory fever, hot and dry skin, flushed countenance, suffused eyes, quick and hard pulse, the arteries of the neck throb, and delirium. The senses are morbidly acute, there being intolerance of light and sound. The person is extremely restless, the muscles of the face are spasmodically contracted, the upper eye-lids hang down, and as the disease progresses, blindness and deafness ensue. The countenance is vacant or idiotic, the eye loses its lustre, the pupils become dilated, and the eyes often squint. In the still more advanced stage the discharges pass off involuntarily, the countenance becomes pale and sunken, the pulse weak and irregular, the coma more profound, and death soon closes the scene. It is commonly called "Brain Fever."

Treatment.—This should be most energetic. Bleeding to fainting has been the practice of many physicians, but I deem it unnecessary, as revulsion can be made by other means. Leeches may, however, be applied to the scalp. The hair should be closely shaved from the head, and ice, alcohol or ether, with water, applied to the head. The decoction of Lady's Slipper should be given internally. At the outset purgatives should be given. Those that act thorouhly, such as gamboge, colocynth, etc., are the best. The bladder should be emptied every day. In the stage of collapse, stimulants may be given.

APOPLEXY.

This is a condition in which all the functions of animal life are suddenly stopped, except the pulse and the breathing. There is neither thought nor feeling, nor voluntary motion, and the patient suddenly falls down, and lies as if in a deep sleep. The disease assails in three different ways. The first form of attack is a sudden falling down into a state of insensibility and apparently deep sleep, the face being generally flushed, the breathing stertorous, or snoring, the pulse full and not frequent, with occasional convulsions. From this mode of attack death often occurs immediately, but in some cases recovery occurs, with the exception of paralysis of one side, or the loss of speech, or some of the senses. The second mode of attack begins with sudden pain in the head, and the patient becomes pale, faint, sick, and vomits. His pulse is feeble, has a cold skin, and occasionally some convulsions. He may fall down, or be only a little confused, but soon recovers from all the symptoms except the headache; this will continue, and the patient will sooner or later become heavy, forgetful, unable to connect ideas, and finally sink into insensibility, from which he never rises. This mode of invasion, though not so frightful as the first, is of much more serious import.

The third form of attack is where consciousness is retained, but power on one side of the body is suddenly lost. The patient retains his mind, and answers questions rationally, either by signs or words. He may either die soon, or live for years with imperfect speech, or a leg dragging after him, or an arm hanging loosely by his side.

Those persons who have large heads, red faces, short and thick necks, and a short, stout, square build, are more predisposed to this disease than thin, pale and tall persons. Literary men, especially editors, lawyers, doctors, etc., are subject to this disease, owing to mental overwork.

The symptoms preceding an apoplectic attack are headache, vertigo, double vision, faltering speech, inability to remember certain words, sometimes forgetfulness of one's own name, a frequent losing of a train of ideas, and occasionally an unaccountable dread. It is caused by whatever hurries the circulation, as strong bodily exercise, emotional excitement, exposure to the sun or severe cold, tight cravats, etc.

Treatment.—If the face is turgescent and red, and the temporal arteries throb, and the pulse full and hard, the patient should be placed in a semi-recumbent position, with his head raised, his clothes loosened, particularly his neckband and shirt collar, and then, quickly as possible, cold water or ice should be applied to the head, leeches to the nape of the neck, and mustard plasters to the calves of the legs. Tight ligatures may also be tied around the thighs sufficiently tight to arrest the venous circulation; they should be removed gradually as consciousness returns. Administer a stimulating purgative, as a few drops of croton oil. Injections may also be given.

If the patient is old, and the pulse feeble, the ice applications, ligature, etc., may be omitted, and instead apply warm flannels and warm bricks to the body, and administer camphor. To prevent future attacks, gentle tonics should be given, and the skin kept healthy by daily bathing and friction. The bowels must not be permitted to become costive. The diet should be well regulated. The mind should be kept cheerful and hopeful, and free from all excitement. Intoxicating drinks should be totally avoided, and sexual congress should be of rare occurrence. In fact everything that might provoke an attack should be avoided.

DR. STRICKLAND'S ADVICE TO MOTHERS.

There are no diseases more distressing or common than those known as female complaints, and none more neglected. They are always aggravated and prolonged, if not generally produced by neglect. This is not the case with the young alone, but also with the middle-aged women, both married and single. A slight cold will often produce the most serious results, if not taken in time, when the monthly discharges, or menses, are obstructed or profuse or painful. You must know there is a cause for it, and it is your duty to take some course immediately to remedy the ill, either by applying to a physician or making use of the following:—

OBSTRUCTED MENSTRUATION.

FORMULA No. 1.

Sulphate of Iron	30 grains.
Subcarbonate of Potass.	30 ,,
Myrrh	60 ,,
White Sugar	30 ,,

Mix, and make into pills 3½ grains each. Take two, three times a day.

FORMULA No. 2.

Powdered Myrrh	60 grains.
,, Rhubarb	60 ,,
Extract of Aloes	20 ,,
Extract of Chamomile	2 drachms.
Gum Acacia	sufficient.

Mix. Make into pills of 3½ grains each.

Dose.—Two, three times a day.

IN OBSTINATE CASES OF CONSTIPATION.

Extract of Henbane	30 grains.
,, Colocynth	20 ,,
,, Nux Vomica	10 ,,

Mix. Work into pill mass, and form 15 pills.

Dose.—One pill, every night and morning.

CHOLERA.

This much-dreaded disease is undoubtedly contagious, and is frequently communicated from one person to another, not through contact of the body, but by the discharges of the bowels, that are supposed to contain the specific germ that propagates the disease, which sometimes rages as an epidemic.

Causes.—Asiatic cholera is most frequently caused by the use of impure drinking water, excessive use of alcoholic liquors, eating unripe or stale fruit, exposure to sudden changes of temperature, general imprudence, etc.

Symptoms.—The attack is frequently preceded by a diarrhœa, as a premonitory symptom; but sometimes comes on suddenly, with vomiting and purging, stools resembling rice-water; cramps in abdomen and lower limbs; skin cold; lips and skin blue, features pinched, extreme thirst, feeble pulse, and, toward the last, drowsiness, collapse.

Prevention.—The disease is easier prevented than cured. During cholera epidemic, persons should eat and drink with moderation, preserve regularity of habits, and strive to keep the mind free from fear and anxiety; the chances being that they will escape.

Treatment.—When cholera symptoms actually appear the patient should go to bed at once, and a physician be called. In the meantime, small doses of opium and camphor may be given, and broken ice may be given the patient to allay thirst and check vomiting. Give plenty of fresh air, and if the patient becomes cold he should be vigorously rubbed with dry flannels and hot bricks applied. It is important that the bowel discharges be promptly removed from the room, and disinfected by means of sulphate of zinc or copperas dissolved in water. During convalescence great care should be given the patient to prevent a relapse.

Cholera Morbus, or milder form of cholera, originates from much the same causes, and requires the same treatment. It is not contagious.

FORMULA.

Tincture Opium	1 ounce.
„ Camphor	1 „
„ Capsicum	1 „
Spirits Ether, Comp.	1 „

Mix. Take 10 to 20 drops, as a preventive, and increase the dose to 40 or 60 drops, if required, in actual attack of cholera.

VACCINATION.

The plan of vaccination, as a prevention against small-pox, has been known to science for many years; but it is only recently that it has been largely practised, and its efficacy generally admitted. Particularly in those countries that are constantly receiving a foreign emigration frequently infected with small-pox, it is important that vaccination should be universally practised, as the only method of arresting the spread of that terrible scourge through all the highways of travel.

The usual place for vaccination to be performed is on the outside of the left arm, above the elbow. It is usually done by a physician, but in case of an emergency, can be performed by almost any one. The bovine, or kine matter, is the safest to use, and can usually be obtained on quills or ivory points. Take one fresh ivory point and, having scarified a small place on the arm until it is just ready to bleed, moisten the point in water for a moment, and rub the lymph contained on the point well into the arm, and the work is done. If the bovine matter cannot be obtained, a fresh crust from the arm of a healthy infant may be used.

Never use two points in vaccination. If the matter is fresh, one is sufficient. Never use matter from the arm of a person that has had syphilis, in however mild a form; it is sure to become communicated. During the first few days after vaccination has been performed, if the itching and burning is intense, it may be alleviated by washing the part in a weak solution of sugar of lead, or a few drops of carbolic acid in rain water. Avoid taking cold.

Vaccination should be performed in infancy, and once every seven years thereafter. It is erroneous to suppose that vaccination will hold good as long as the scar remains. Whenever vaccination will take, the person would be liable to contract small-pox.

PHYSICIANS' FAVOURITE PRESCRIPTIONS.

AGUE, CHILLS, AND FEVER.

Sulphate of Quinia	20 grains.
Bicarbonate of Soda	30 „
Fluid Extract of Licorice	3 drachms.
Peppermint Water	12 „

Mix. Teaspoonful, three or four times a day, to young children; as the bitter taste of the alkaloid is *completely disguised.*

TASTELESS SOLUTION OF QUININE FOR CHILDREN, IN AGUE.

Sulphate of Quinine	15 grains.
„ Cinchonia	10 „
Tannic Acid	10 „
Simple Syrup	6 drachms.
Syrup of Orange Peel	6 „
Aqua Cinnamon	2 ounces.

Mix. *Dose.*—One teaspoonful, three times a day.

TOOTHACHE DROPS.

Chloroform	1 ounce
Laudanum	1 „
Tincture of Benzoin	4 „

Mix, and apply on a little cotton.

DYSPEPSIA PILLS.

Sulphate of Zinc	4 grains.
Extract of Nux Vomica	4 „
Podophyllin	2 „
Extract Rhei	24 „

Divide into 16 pills. *Dose.*—One pill three times a day.

IN SECONDARY SYPHILIS.

Hydrarg., Chloridi Cor.	2 grains.
Chlor. Ammonii	120 „
Tinct. Chlo. Ferri	180 minims.
Syrup	1 fl. ounce.
Aqua Cinnamon, q. s. to make	4 ounces.

Mix. *Dose.*—Teaspoonful, in water, three times a day

EPILEPSY.

Bromide of Soda	8 ounces.
Sulphate of Strychnia	½ grain.
Aqua Pura	1 pint.

Mix. Take one teaspoonful three times a day.

COUGH MIXTURE.

Mist. Glycyrrh. Comp.	4 ounces.
Syrup Pruni Virg.	2 „
Syrup Senega	5 drachms.
Chloride of Ammonia	2 „
Sulph. Morphia	2 grains.
Syrup of Acacia	8 ounces.

Mix. *Dose.*—Dessertspoonful every three hours.

FOR NEURALGIA OF THE UTERUS.

Tincture Aconite Root	1½ drachm.
Ammonii Chloride	2 „
„ Iodide	1 „
Tincture Card. Comp.	1 ounce.
Syrupi Aurant	4 „
Aqua Anisi, q. s. to make	8 „

Mix. *Dose.*—Teaspoonful every four hours; also give, before each meal, a teaspoonful of the syrup of the phosphates of iron, quinine and strychnia.

IN SYPHILIS.

Hydrarg., Iodidi Vir.	12 grains.
Extract Cannabis Indicus	6 „
Extract Conii	12 „
Lupulinæ	12 „

Divide into 12 pills.

Mix. Take one pill three times a day.

COUGH MIXTURE IN CONSUMPTION.

Mist. Glycyrrhiza Comp.	4 ounces.
Syrup Pruni Virg.	2 „
Sulphate of Quinine	32 grains.
Sul. of Morphia	2 „
Elixir Taraxaci Comp.	2 ounces.

Mix. *Dose.*—Dessertspoonful every four hours.

ACUTE RHEUMATISM.

The alkaline treatment is the one most generally adopted in the medical wards of London and New York. Here is a good one:—

Soda Bicarb.	1½ ounce.
Potass. Acetat	½ „
Liquor Ammon. Acetat	3 fl. „
Aqua, q. s. ad.	1 pint.

Mix. *Dose.*—One to three teaspoonfuls.

CEREBRO-SPINAL MENINGITIS.

Potassi Bromidi	2 drachms.
Fl. Ext. Ergot	3 „
Tinct. Belladonna	1 „
Tinct. Aconite Root	12 drops.

Curacoa Cordial, sufficient to make 3 ounces.

Dose.—Dessertspoonful every three hours.

FOR CASEOUS PNEUMONIA.

Acidi Nitrici	20 grains.
Potassi Cyanidi	5 „
Morphia Sulph.	2 „
Tinct. Hyoscyami	1 drachm.
Syrupi Tolutani	4 ounces.
Syrupi Picis Comp.	2 „

Mix. *Dose.*—Take a teaspoonful every three hours.

FOR PUERPERAL CONVULSIONS.

Potassi Bromidi	1 drachm.
Chloral Hydrate	1 „
Camphor	6 grains.
Tinct. Card. Comp.	6 drachms.

Mix. *Dose.*—Teaspoonful, diluted, every half-hour until relieved.

GONORRHŒA.

Balsam Canad.	1 ounce.
Spirits of Nitre Dulc.	4 „
Oil of Turpentine	2 drachms.
Powdered Camphor	1 „

Mix. *Dose.*—Teaspoonful three times a day. Inject the following every six hours:—

Fl. Ext. Hydrastis Canadensis	1 ounce.
Sulphate of Zinc	3 grains.

Mix.

ERYSIPELAS.

Tinct. Mur. Ferri	2 drachms.
Chlorate of Potass.	2 „
Aqua and Syr. to make	4 ounces.

Mix. *Dose.*—Tablespoonful every four hours. As an external application use the following:—

Acetate of Lead	2 drachms.
Tinct. Opii	4 „
Aqua	½ pint.

Mix. Apply often.

INFANTILE DIARRHŒA.

Syr. Rhei. Arom.	1 ounce.
Mucilage of Acacia	1 „
Subnitrate of Bismuth	1 drachm.
Spts. Ammonia Arom.	20 drops.
Syrup of Ipecac.	20 „

Mix. *Dose.*—Teaspoonful every three hours to a child one year old.

FOR RHEUMATISM.

Iodide of Potassium	2½ drachms
Tincture of Cimicifuga	1½ fl. ounce.
Wine of Colchicum Seed	1 „
Fl. Ext. Henbane	½ „
Simple Syrup	1 „

Mix. *Dose.*—A teaspoonful copiously diluted with water every four hours.

INTERMITTENT FEVER.

Sulphate Quinine	1 drachm.
Reduced Iron	1½ „
Strychnia	2 grains.

Confection of roses sufficient to make 60 pills.

Mix. *Dose.*—One pill every three hours, in absence of fever.

A REMEDY FOR THE ERUPTION OF POISON OAK, IVY, SUMAC, ETC.

Bromine	20 drops.
Olive Oil	1 ounce.

Mix. Rub gently on the affected part three or four times a day.

Wash off the oil twice a day with Castile soap. Renew the bromine every 24 hours. It is best to stand the bottle on its cork end in the interval of application.

FACIAL NEURALGIA.

Nitrate of Amyl	5 drops.

Drop on blotting paper and inhale the vapour.
If the pain returns repeat the process.

DIPHTHERIA.

FORMULA No 1.

Chlorate of Potassa	1 drachm.
Muriate Tincture of Iron	1 „
Sulphate of Quinine	15 grains.
Hyposulphite of Soda	1 drachm.
Water	7 ounces.

Mix. *Dose.*—Teaspoonful to dessertspoonful, to be used three times a day. Administer as well to all who are exposed to the disease.

FORMULA No. 2.

Acid Phos. Dilute	½ ounce.
Tinct. Chloride of Iron	½ „
Spts. Lemon	2 drachms.
White Sugar	2 „
Water	6 ounces.

Mix. *Dose.*—Teaspoonful every two or three hours in a little water.

INTERMITTENT FEVER.

Sulphate Cinchonidia	30 grains.
Tincture Chloride of Iron	30 drops.
Tincture Nux Vomica	10 „
Aqua Distill.	1 ounce.
Podophyllin	2 grains.
Syr. Simplex, q. s. to make	4 ounces.

Mix. *Dose.*—Teaspoonful four times a day.

HEADACHE.

Potassi Bromidi	2 drachms.
Morphia Sulph.	½ grain.
Tincture Verat. Virid.	10 drops.
Water	1 ounce.

Mix. *Dose.*—Dessertspoonful, in water, every hour or two until relieved.

THRUSH.

Chlorate of Potass.	1½ drachm.
Sulphite of Soda	1½ „
Sodæ Bibor.	1½ „
Glycerine	½ ounce.
Aqua, to make	2 „

Mix. Swab the mouth often.

SCARLET FEVER.

Saturated Solution Bromide Potass.	2 ounces.
Bromine	1 drachm.

Add the bromine very slowly, shaking the bottle constantly; when dissolved add water till a four-ounce mixture is obtained.

For internal application one drachm of this solution is put in one ounce of water, and of that a teaspoonful is given in a tablespoonful of sweetened water, as necessary.

ASTHMA.

Camphor Water	8 ounces
Bromide of Potassium	½ „
Bromide of Ammonia	½ „
Tincture of Lobelia	1 „
Tincture of Stramonium	1 „

Mix. *Dose.*—Teaspoonful every three hours.

SHORTNESS OF BREATH.

Oil of Stillingia	1 drachm.
„ Cajeput	1 „
„ Lobelia	½ „
„ Lavender	½ „
„ Cinnamon	10 drops.
Alcohol	1 ounce.

Mix. *Dose.*—One or two drops on sugar.

CHRONIC BRONCHITIS.

Bals. Copaiba	4 drachms.
Liq. Potassi	1 „
Pulv. Ext. Glycyrrhizæ	2 „
Syrup Scilla	1 ounce.
Oil Amygdalæ Amar.	10 drops.
Paregoric	1 ounce.
Syrup of Acacia, q. s. to make	4 „

Mix. *Dose.*—Teaspoonful every three or four hours.

DYSENTERY.

Pill Hydrarg.	12 grains.
Pulv. Ipecac.	12 „
Gelseminum	2 „

Mix. Divide into 12 pills. *Dose*—One every three or four hours, until the effects of the gelseminum is manifest in debility of the eyelids, and then discontinue.

IN FEVERS.

The following as a diaphoretic will be found excellent:—

Liq. Ammonia Acet.	6 ounces.
Spirits of Nitrous Ether	½ „
Ant. et Potassæ Tart.	1 grain.
Morphia	1 „
Syr. Acidi Citrici	½ ounce.

Mix. *Dose.*—Tablespoonful every three hours.

IN PHTHISIS.

Pulv. Digitalis	10 grains.
Sulph. Quinine	10 „
„ Iron	5 „
Ext. of Conium	25 „

Mix. Make 10 pills. *Dose.*—Take one every four hours.

IN CARDITIS.

Hydrarg., Chlorid. Mitis	10 grains.
Camphor	10 „
Ext. of Hyoscyamus	30 „

Mix. Make 10 pills. *Dose.*—One every four hours.

IN DYSPEPSIA.

Ext. Nucis Vomicæ	1½ grain.
Argenti Nitrate	2 „
Ext. Lupuli	12 „

Mix. Make 6 pills. *Dose.*—One every four hours.

IN RHEUMATIC DYSMENORRHŒA.

Salicylic Acid	3 drachms.
Bicarbonate Soda	2 „
Tincture Stramonium	4 „
Vini Colchicum Root	4 „
Glycerine	1 ounce.
Water	3 „

Mix. *Dose.*—A teaspoonful four times a day.

CONGESTIVE DYSMENORRHŒA.

Fluid Ext. Ergot	7 drachms.
Tincture Gelseminum	1 „
Tincture Aconite Root	16 drops.

Mix. *Dose.* — A teaspoonful every four hours or oftener.

IN ANÆMIA WITH AMENORRHŒA.

Arsenic	1 grain.
Sulphate of Iron (powdered)	½ drachm.
Powdered Black Pepper	1 „
Pill Aloes and Myrrh	1 „

Mix. Make 60 pills. *Dose.*—One twice a day after meals.

DIURETIC IN CARDIAC DROPSY.

Infusion Digitalis	3½ ounces.
Acetate Squills	½ „

Mix. *Dose.*—A tablespoonful three times a day.

DIPHTHERET CROUP.

Chlorate of Potash	2 drachms.
Syrup of Lemon	1 ounce.
Water	3 „

Dose.—If under two years, 1 teaspoonful; from two to ten, 2 teaspoonfuls; over ten, a tablespoonful, given every three hours.

IN BRONCHIAL CATARRH.

Acetate of Squills	½ ounce.
Fl. Ext. Ipecac	½ drachm.
Tinct. Opium, Deodorat	1 „
Syrup Tolu	10 „

Mix. *Dose.*—Teaspoonful every two, three, or four hours.

PNEUMONIA.

Ammonia Muriatis	3 drachms.
Antim. et Pot. Tartrat	2 grains.
Sulph. Morphia	3 „
Syrup Glycyrrhizæ	4 ounces.

Mix. *Dose.*—Teaspoonful every two hours.

Hydrarg. Chlor. Mitis	6 grains.
Ipecac Pulveris	6 „
Opii Pulveris	3 „
Sacchar. Alb.	30 „

Mix. Make 6 powders. *Dose.*—One powder every four hours, alternately with the preceding prescription. At the same time cover the chest with emollient poultices. At the end of twenty-four hours omit the powders, and if the bowels have not been moved, give a mild laxative. If the symptoms are not favourably modified in three or four days, a blister is placed on the side of the chest most affected.

CONVULSIONS.

Musk	6 grains.
Sesquicarb. Ammonia	4 „
White Sugar	3 drachms.

Mix thoroughly and add

Aqua Elder Flowers	2½ ounces.

Dose.—Teaspoonful every hour.

DROPSY (following Scarlet Fever).

Tinct. Digitalis	16 drops.
Potass. Acet.	80 grains.
Syrup of Squills	1 fl. ounce.
Acetate of Squills	½ fl. „
Aqua Mentha Pip.	½ fl. „

Mix. *Dose.* — Teaspoonful, to a child, every two hours.

WHOOPING COUGH.

FORMULA No. 1.

Sulph. Zinc	10 grains.
Pulv. Myrrh	1½ drachm.
Confect. Rosarum, q. s.	

Make 20 pills. *Dose.*—One pill.

FORMULA No. 2.

Ext. of Belladonna	2 grains.
Aqua	2 ounces.

Mix. *Dose.*—Five or six drops four times a day.

FORMULA No. 3.

Chloral Hydrate	1 drachm.
Simple Syrup	4 ounces.

Mix. *Dose.*—Teaspoonful, according to severity.

FORMULA No. 4.

Acid. Nit. Dil.	12 drachms.
Tinct. Card. Comp.	3 ,,
Simple Syrup	3⅓ ounces.
Aqua	1 ,,

Mix. *Dose.*—Teaspoonful every hour, or second hour, with soda gargle immediately after administering.

CHOLERA INFANTUM.

FORMULA No. 1.

Creosote	3 drops.
Chalk Mixture	1½ ounce.
Acetate of Lead	15 grains.
Acacia	½ ounce.

Form into an emulsion. *Dose.*—Thirty drops every two or three hours.

FORMULA No. 2.

Calomel	10 grains.
Sub. Nit. Bismuth	20 ,,
Powdered Opium	1 grain.
Pepsin	20 grains.

Make 30 powders. *Dose.*—One every three or four hours, or oftener if needed.

COUGH.

Aq. Fœniculi	4 drachms.
Wine of Antimony	1 ,,
Ext. Hyoscyamus	3 grains.
Syrup Althæ	1⅓ ounce.

Mix. *Dose.*—A teaspoonful, every two hours, to an infant from six to twelve months.

INFANTILE DIARRHŒA.

Acetate of Lead	2 grains.
Opium	½ ,,
Camphor	1 ,,
Sugar	3 ,,

Mix. Divide into 12 powders, and administer one as often as needed.

CROUP.

Oil of Stillingia	½ drachm.
,, Cajeput	½ ,,
,, Lobelia	½ ,,
,, Lavender	½ ,,
,, Cinnamon	10 drops.
,, Alcohol	1 ounce.

Mix. As soon as a croup cough is noticed, rub a small quantity on the throat, and repeat every hour as long as needed. If the case is very bad, administer one or two drops, on sugar, every hour or two.

LOTION IN ACNE.

Hydrarg. Chlor. Cor.	1 scruple.
Glycerine	1½ ounce.
Rectified Spirits of Wine	1 ,,
Spirits Rosemary	4 drachms.

Mix. Use as a lotion.

CHRONIC ALCOHOLISM.

Oxide of Zinc	1 drachm.
Piperin	20 grains.

Mix. Make 20 pills. Take one pill three or four times a day.

AMENORRHŒA.

Arsenic	1 grain.
Sulph. Ferri. (exsiccat)	½ drachm.
Pulv. Pip. Nig.	1 ,,
Pil. Al. et Myrrh	1 ,,

Mix. Divide into 40 pills. *Dose.*—One twice a day after meals.

AS AN APHRODISIAC.

Ergotin	20 grains.
Sanguinaria	2 ,,

Mix. Ft. pil. No. 20. *Dose.*—One three times a day.

LOSS OF APPETITE.

Sulph. Quinine	8 grains.
Acid Nit. Dil.	½ drachm.
Tinct. Aurantii	½ ounce.
Syrup Aurantii	1 ,,
Aqua Ad.	8 ,,

Mix. *Dose.*—Two tablespoonfuls three times a day.

HAY ASTHMA.

Iodide of Potass.	½ ounce.
Liq. Potass., Arsenit	1 drachm.
Aqua	4 ounces.

Mix. *Dose.*—Teaspoonful every four hours.

CEREBRAL CONGESTION.

Bromidi Sodii	1 ounce.
Fluid Ext. of Ergot	4 ,,

Mix. *Dose.*—Tablespoonful three times a day.

ASTHMATIC FITS OF EMPHYSEMA.

Tincture of Opium	1 drachm.
Ether Sulph.	2 ,,

Mix. *Dose.*—Teaspoonful every twenty minutes. To each dose may be added

Tinct. Lobeliæ Aetheræ Gtt. XX.

DIPHTHERETIC CROUP.

Potassii Chloratis	2 drachms.
Syrupi Limonis	1 ounce.
Aqua Pura	3 ,,

Mix. *Dose.*—According to age. If under two years, a teaspoonful; from two to ten, two teaspoonfuls; over ten, a tablespoonful, given every three hours.

TOOTHACHE REMEDY.

Chloral Hydrate	1 drachm.
Camphor	16 „
Morphia Sulph.	2 grains.
Oil Peppermint	2 drachms.

Rub solids in a mortar until they liquefy, then add the Oil Peppermint.

Apply on cotton.

HEMORRHAGES.

Acidi Gallici	1 drachm.
Glycerini	½ ounce.
Aqua Distillata	6 „

Mix. *Dose.*—Two tablespoonfuls three times a day.

CORYZA.

Syr. Scillæ	½ fl. ounce.
Tinct. Opii Camph.	2 fl. drachms.
Vin. Antimonii	1 fl. „
Gum Acaciæ	½ fl. „
Aqua Distill.	2 fl. ounces.

Mix. *Dose.*—A teaspoonful every hour or two.

PNEUMONIA.

Liq. Antim et Potas. Tart.	2 fl. drachms.
Tinct. Opii	2 drops.
Muc. Acaciæ	½ fl. ounce.
Syr. Limonis	2 fl. drachms.
Aqua Mentha Pip.	1 fl. ounce.

Mix. *Dose.*—From one to two teaspoonfuls every two hours.

MUMPS.

Olive Oil	1 ounce.
Aqua Ammonia	½ „
Oil Terebinth	2 drachms.

Mix. Apply several times a day.

RINGWORM.

Sulph. Zinc	15 grains.
Lard	½ ounce.

Mix. Wash the part affected and wipe dry; then apply the ointment once or twice a day.

CONSTIPATION.

Carb. Magnesia	1 drachm.
Pulv. Rhei	10 grains.
Saponis	20 „

Mix. *Dose*—Ten grains twice a day.

CATARRH REMEDY.

Powd. Hydrastis Canadensis	5 drachms.
Indigo	½ „
Powdered Camphor	2 „
Carbolic Acid	2 „
Common Salt	50 „

Powder the camphor by means of alcohol, and mix with the salt, previously reduced to a fine powder. Rub the indigo and carbolic acid together, mix with the salt and camphor, and add the powdered golden seal; mix intimately, without much pressure, in a mortar.

The above is said to be Sage's Catarrh Cure.

A VALUABLE REMEDY FOR CATARRH.

White Hellebore (powdered)	2 drachms.
Orris Root	1 „
Rice	12 „
Oil of Lavender	1 drop.
„ Cassia	1 „
„ Lemon	1 „

EXTERNAL PILES.

Powdered Opium	40 grains.
Pulv. Plumbi Acetatis	30 „
Pulv. Nut Galls	2 „
Tannic Acid	20 „
Simple Cerate	1 ounce.

Mix. Apply a portion on going to bed.

INCONTINENCE OF URINE.

Fl. Ext. Ergot	1 ounce.

Dose.—Ten drops after each meal, followed, in a little while, by the same amount of muriate tinć. of iron.

WHOOPING COUGH.

Oil, Succini Rect.	1 ounce.
Tincture of Opium	1 „
Aqua Ammonia	1 „
Olive Oil	1 „

Mix. Rub along the whole track of the spine two or three times a day, to be discontinued when the parts become tender.

BURNS.

If you have a wet surface apply bicarbonate of soda in dry powder, then cover with a wet cloth so as to keep the surface moist. A dry burn must have the soda in solution.

CHRONIC THROAT AFFECTIONS.

Tannic Acid	2 drachms.
Rectified Spirits Wine	1 „
Camphor Mixture, to make	10 ounces.

Mix. Use as a gargle.

CHRONIC BRONCHITIS.

Ext. Eucalyptus	1 ounce.
Muriate of Ammonia	2 drachms.
Extract of Glycerine	2 ounces.
Syrup of Tolu	3 ,,

Mix. *Dose.*—A tablespoonful, four or six times a day.

ANOTHER.

Chloride of Ammonia	2 drachms.
Compound Mixture of Licorice	3 ounces.

Mix. *Dose.*—A dessertspoonful, three times a day

ACUTE CATARRH.

Tartar Emetic	½ grain.
Acetate of Morphia	½ ,,
Water	2 ounces.

Mix. *Dose.*—A tablespoonful every hour or so.

CASEOUS PNEUMONIA.

Infusion of Digitalis	4 ounces.
Acetate of Lead	20 grains.
Laudanum	1 drachm.

Mix. *Dose.*—A teaspoonful twice a day.

A SURE CURE FOR GONORRHŒA.

Powdered Iodoform	2 drachms.
Subnitrate of Bismuth	2 ,,
Hydrate of Chloral	15 grains.
Morphia	5 ,,
Cocoa Butter	1 ounce.
Oil of Rose Geranium	20 drops.

Mix, and divide into twenty-four suppositories, one-eighth of an inch in diameter. Directions: One to be pushed into the urethra three times daily.

REMEDY FOR SYPHILIS.

Caroba Leaves	(powdered)	90 parts.
Sarsaparilla	,,	30 ,,
Senna Leaves	,,	30 ,,
Calomel	,,	2 ,,
Simple syrup, q. s.	,,	

Mix. *Dose.*—A teaspoonful, night and morning, with caroba tea.

BLEEDING FROM THE LUNGS.

Sugar of Lead	40 grains.
Powdered Foxglove	20 ,,
Powdered Opium	10 ,,

Mix. Make 20 pills. *Dose.*—One every four hours.

IN CHRONIC HEART DISEASE.

Powdered Foxglove	30 grains.
Sulphate of Iron (powdered)	15 ,,
Powdered Capsicum	1 drachm.
Pill of Aloes and Myrrh	2 ,,

Mix. Form a mass and make 60 pills. *Dose.*—One twice a day.

INFLUENZA.

Dilute Phosphoric Acid	15 drops.
Spirits of Chloroform	25 ,,
Syrup of Squills	1 drachm.
Water	1 ounce.

Mix. *Dose.*—Teaspoonful four or six times every twenty-four hours.

A STIMULATING EXPECTORANT.

Carbonate of Ammonia	5 grains.
Tincture of Nux Vomica	10 drops.
Tincture of Squills	½ drachm.
Infusion of Serpentaria	1 ounce.

Mix. *Dose.*—Teaspoonful three times a day.

WHOOPING COUGH MIXTURE.

Tincture of Nux Vomica	2 drachms.
Wine of Ipecac	2½ ,,
Syrup of Sarsaparilla Comp.	1½ ounce
Syrup of Senega	1½ ,,

Mix. *Dose.*—A teaspoonful for children.

DIPHTHERIA.

Benzoate of Soda (pure)	1 drachm.
Distilled Water	1 ounce.
Peppermint Water	1 ,,
Syrup of Orange Peel	2 drachms.

Mix. *Dose.*—For an infant under one year, one-half tablespoonful every hour.

FOR HEMORRHAGES.

Gallic Acid	1 drachm.
Glycerine	½ ounce.
Distilled Water	6 ,,

Mix. *Dose.*—Two tablespoonfuls three times a day.

CHOLERA CURE.

Tinct. of Opium	2 ounces.
Spirits of Camphor	2 ,,
Tinct. of Capsicum	½ ,,
Tinct. of Ginger	1 ,,
Essence of Peppermint	2 ,,
Hoffman's Anodyne	2 ,,

Mix. *Dose.*—Ten to twenty drops every twenty minutes, till relieved.

CHOLERA CURE, No. 2.

Chloroform	3 drachms.
Tincture of Camphor	6 ounces.
Tannic Acid	½ drachm.
Sulph. Morphia	1½ grain.

Mix. *Dose.*—Teaspoonful in water or syrup.

IN PROFUSE DIARRHŒA.

Carbonate of Ammonia	5 grains.
Tincture of Opium	10 drops.
Infusion of Logwood	1 ounce.

Mix. This amount every three or four hours.

NIGHT SWEATS.

Arom. Sulphuric Acid	2 drachms.
Tincture of Opium	1 ,,
Syrup of Orange Peel	1 ounce.
Water, sufficient to make	8 ,,

Mix. *Dose.*—Two teaspoonfuls three times a day.

The above prescription is also very useful in summer diarrhœa, and as a preventive against painters' colic.

COMPOUND ETHER MIXTURE.

Hoffman's Anodyne	2½ drachms.
Tincture of Lobelia	½ ,,
Camphor Water	5 ,,

Dose.—One to two teaspoonfuls. Good for all cases of pain of the bowels and as a general anodyne.

COUGH MIXTURE.

Syrup of Ipecacuanha	1 ounce.
Syrup of Tolu	1 ,,
Syrup of Rhubarb	1 ,,
Paregoric	1 drachm.

Mix. *Dose.*—Teaspoonful every two hours.

ANOTHER.

Ammonia Chlor.	1½ drachm.
Spirit of Ether Compound	½ ounce.
Syrup of Ipecacuanha	2½ drachms.
Powdered Extract of Licorice	1 ,,
Water, sufficient to make	4 ounces.

Mix. *Dose.*—Teaspoonful, in wineglass of water, three or four times a day.

This mixture will be found beneficial in the cough of bronchitis.

LOTIONS.

These are especially called for after sprains, bruises, and blows which do not break the skin, but are followed by swelling and pain.

No. 1.

Tannic Acid	1 drachm.
Tincture of Opium	2 ,,
Water	6 ounces.

Mix and apply. Astringent and sedative.

No. 2.

Liquor Sugar of Lead	1 drachm.
Alcohol	6 ,,
Extract of Opium	10 grains.
Water	10 ounces.

Mix and apply. Astringent and sedative.

No. 3.

Chloride of Ammonia	5 drachms.
Acetic Acid	10 ,,
Alcohol	10 ,,
Water	10 ounces.

Mix. Evaporating and discutient. Highly esteemed in the Hospitals of Europe.

COUGH MIXTURE.

Syrup of Tolu	1 ounce.
Syrup of Wild Cherry	1 ,,
Tincture of Henbane	1 ,,
Compound Spts. of Ether	1 ,,
Water	1 ,,

Mix. *Dose.*—A teaspoonful.

IN LEAD COLIC.

Alum	2 drachms.
Dilute Sulphuric Acid	1 ,,
Syrup of Lemons	8 ,,
Water	3 ,,

Mix. *Dose.*—A tablespoonful every hour or two.

STODES' EXPECTORANT MIXTURE.

Carbonate of Ammonia	32 grains.
Fluid Extract of Senega	1 drachm.
Fluid Extract of Squills	1 ,,
Paregoric	6 ,,
Water	½ ounce.
Syrup of Tolu, sufficient to make	4 ,,

Mix. *Dose.*—A teaspoonful.

LICORICE MIXTURE.

Chloride of Ammonia	2 drachms.
Extract of Licorice	2 ,,
Paregoric	2 ,,
Water, sufficient to make	4 ounces.

Mix. *Dose.*—A teaspoonful.

SEDATIVE MIXTURE.

Diluted Hydrocyanic Acid	1 drachm
Chloroform (pure)	1 ,,
Tincture of Henbane	8 ,,
Syrup of Tolu	8 ,,
Camphor Water	8 ,,
Mucilage of Acacia	8 ,,

Mix. *Dose.*—A teaspoonful.

IN SUMMER CATARRH (HAY ASTHMA).

Iodide of Potass.	1 ounce.
Fowler's Solution	1 drachm.
Water	4 ounces.

Mix. *Dose.*—A teaspoonful every four or six hours.

ACUTE BRONCHITIS.

Wine of Ipecac	2 drachms.
Liquor Citrate of Potash	4 ounces.
Paregoric	1 ,,
Syrup of Acacia	1 ,,

Mix. *Dose.*—A tablespoonful three times a day in the first stage of ordinary acute bronchitis.

EXCORIATED SKIN.

Borax	1 drachm.
Dilute Alcohol	1½ ,,
Distilled Water	3 ounces.

Mix. To be applied several times a day in bruises with excoriated skin.

COOLING LOTION.

Liquor Acetate of Ammonia	½ ounce.
Water	1½ ,,

Mix. Use as a cooling lotion.

IN PAINFUL JOINTS.

Chloride of Ammonia	2½ drachms.
Camphor	40 grains.
Soap	1½ drachm.
Dilute Alcohol	5 ounces.

Immerse a piece of flannel in this solution and retain it upon the painful joint by a bandage.

POULTICES.

These are used in the beginning of inflammations, to arrest them and prevent the formation of pus; also after suppuration, to facilitate the passage of the matter to the surface and its expulsion, and limit the spread of inflammatory action.

Hints and Cautions.—It is important that poultices should be applied as hot as can be borne, and frequently changed, the old poultice not being removed before the new one is at hand to replace it. In the treatment of boils it is good practice to cover the boil with a piece of opium plaster with a circular hole, and to apply the poultice only over the plaster, or to smear the contiguous surface to the boil with zinc ointment; the object being to protect the adjacent tissues from the action of the poultice, which has a tendency to develop fresh boils.

HOW TO MAKE A GOOD LINSEED POULTICE.

Rinse a bowl with boiling water to heat it, then pour in sufficient boiling water; with one hand sprinkle into the bowl the meal, while with the other stir the mixture constantly with a spoon or spatula, till sufficient meal has been added to make a thin and smooth dough. This should be done rapidly, otherwise the poultice will be almost cold when made. The meal should always be added to the water with constant stirring, as here directed, for if the water be poured over meal the two ingredients are not well blended, and a lumpy, knotty mass is the result. The dough thus made should be spread quickly and evenly over a folded piece of warm linen, cut ready to receive it.

The following is the formula of the British Pharmacopœia for this poultice:—

Linseed Meal	4 ounces.
Olive Oil	½ ,,
Boiling Water	10 ,,

Mix and apply.

BREAD AND MILK POULTICE.

Place a handful of fine bread crumbs in a basin; pour on boiling milk and stir until the mixture is of the thickness of porridge, and perfectly smooth. Spread upon cloth, and apply warm, renewing often. This poultice, though simple, is a valuable one, and always convenient. Useful in inflammations of any kind.

CHARCOAL POULTICE.

Make a bread and milk poultice in the usual way, then sprinkle finely powdered charcoal over it, and apply. Valuable for cleansing old sores, and for arresting mortification.

MUSTARD POULTICE.

Mix ground white mustard with boiling water to the consistency of paste; spread on thick linen, or brown paper, covered with thin muslin. Apply for a few minutes only, unless it is necessary to produce a blister. Used chiefly as a counter-irritant in acute pain and congestion.

SLIPPERY-ELM POULTICE.

Powdered elm bark and boiling water formed into a thin paste. Sometimes a small portion of laudanum is added, which makes a grateful application to abscesses, felons, painful bruises, etc.

STARCH POULTICE.

Make a smooth, moderately thick paste of starch and boiling water, in the usual manner, and spread upon linen cloth. Useful in cases of irritable and inflamed skin eruptions.

SURGICAL EMERGENCIES.

WOUNDS.

Men whose business it is to work as woodchoppers, railway men, miners, etc., and, indeed, all who are liable to cuts and wounds, should know what to do until the doctor comes.

The first thing we shall call your attention to is the necessity of providing yourself with a few necessary articles, in case of emergencies; and first we shall mention Monsel's solution and some adhesive plaster. Here we are prepared against bleeding, except a vital part has been injured. We will suppose, however, that, unfortunately, one has received a wound, either from some sharp instrument, or a gun-shot wound, or some part of the body is lacerated, contused, or punctured, from some cause; and that the wound was bleeding freely. Before the wound is dressed, the character of the bleeding is to be noticed. If the blood is dark-coloured, and flows regularly in a stream, it is venous blood, and you will be able to control it easily; but if it is bright scarlet, and spurts out in jets, some artery has been wounded. If the wound is a gun-shot one, and received in the trunk, proceed thus:—

Take the adhesive plaster, and cut a piece from it large enough to cover the wound well, and then apply it over the wound so as to prevent the flow of blood or entrance of air; or take a rag and shape it in a pledget, and tie it on the wound firmly with a bandage or handkerchief. If internal hemorrhage occurs nothing can be done—the patient will die. (See gun shot wounds.)

If the wound is in the arm or leg you can always do something.

If the blood flows from a vein, cold water, or raising the arm or leg and employing pressure will stop the flow. If you are not successful, apply Monsel's solution, which will cause the blood to coagulate. When the flow of blood has ceased, apply a bandage. If the blood comes out in jets, you may know that an artery is wounded, and a surgeon required immediately; but in such cases instantly apply the Spanish windlass, which is made by tying a handkerchief around the limb, and twisting it with a stick until the hemorrhage ceases. Be careful, however, to apply the windlass above the wound, towards the heart.

In ordinary wounds, cuts, etc., draw the edges together with adhesive plaster and put on cold water dressings.

GUN-SHOT WOUNDS.

"Always look at your gun, but never allow your gun to look at you," or any one else. Wounds made by a gun or pistol shot are, frequently, more easily prevented than cured. In case of a wound of this character, the first thing to be done is to stop the flow of blood, if possible. If the wound is in a limb, this can usually be accomplished by applying a ligature *above* the wound, and by thrusting a portion of a silk handkerchief *into* it. If an artery has been severed, the flow of blood must be stayed by hard and constant pressure upon it.

If possible, the patient should be quickly and quietly removed, placed on a bed and kept quiet, until a surgeon arrives. If there is much prostration from the shock, and loss of blood, the strength should be kept up by artificial stimulants, and plenty of fresh air allowed. In all cases, the ball, or shot, must be extracted, and the wound thoroughly cleansed, or it cannot be expected to heal. Frequent bathing of the part, with warm water, will help to keep down the inflammation, and assist nature greatly. Give mild nourishment and cooling drinks; keep the bowels open.

BANDAGES—HOW TO MAKE AND APPLY THEM.

Bandages are strips of calico, linen, flannel, muslin, elastic webbing, bunting, or some other substance, of various lengths, such as three, four, eight, ten or twelve yards, and one, one-and-a-half, two, two-and-a-half, three, four, or six inches wide, free from hems or darns, soft and unglazed. They are better after they have been washed. Their uses are to retain dressings, apparatus, or parts of the body in their proper positions, support the soft parts, and maintain equal pressure.

Bandages are simple and compound. The former are simple slips rolled up tightly like a roll of ribbon. There is also another simple kind, which is rolled from both ends,—this is called a double-headed bandage. The compound bandages are formed of many pieces.

Bandages for the head should be two inches wide and five yards long; for the neck, two inches wide and three yards long; for the arm, two inches wide and seven yards long; for the leg, two inches-and-a-half wide and seven yards long; for the thigh, three inches wide and eight yards long; and for the body, four or six inches wide and ten or twelve yards long.

To apply a single-headed bandage, lay the outside of the end next to the part to be bandaged, and hold the roll between the little, ring and middle fingers, and the palm of the left hand, using the thumb and fore-finger of the same hand to guide it, and the right hand to keep it firm, and pass the bandage partly round the leg towards the left hand. It is sometimes necessary to reverse this order, and therefore it is well to be able to use both hands. Particular parts require a different method of applying bandages, and therefore we shall describe the most useful separately; and there are different ways of putting on the same bandage, which consists in the manner the folds or turns are made. For example, the circular bandage is formed by horizontal turns, each of which overlaps the one made before it; the spiral consists of spiral turns; the oblique follows a course oblique or slanting to the centre of the limb; and the recurrent folds back again to the part whence it started.

Circular bandages are used for the neck, to retain dressings on any part of it, or for blisters, setons, etc.; for the head, to keep dressings on the forehead, or any part contained within a circle passing round the head; for the arm, previous to bleeding; for the leg, above the knee; and for the fingers, etc.

To confine the ends of bandages some persons use pins, others slit the ends for a short distance, and tie the two strips into a knot, and some use a strip of adhesive plaster. Always place the point of a pin in such a position that it cannot prick the patient, or the person dressing the limb, or be liable to draw out by using the limb; therefore, as a general rule, turn the head of the pin from the free end of the bandage, or towards the upper part of the limb. The best mode is to sew the bandage on. A few stitches will hold it more securely than pins can.

The oblique bandage is generally used for arms and legs, to retain dressings.

The spiral bandage is generally applied to the trunk and extremities, but is apt to fall off even when very carefully applied; therefore, we generally use another, called recurrent, which folds back again.

The recurrent bandage is the best kind of bandage that we can employ for general purposes. The method of putting it on is as follows: Apply the end of the bandage that is free, with the outside of it next the skin, and hold this end with the finger and thumb of the left hand, while some one supports the heel of the patient; then, with the right hand, pass the bandage over the piece you are holding, and keep it crossed thus until you can place your right forefinger upon the spot where it crosses the other bandage, where it must be kept firm. Now hold the roll of the bandage in your left hand, with the palm turned upwards, and taking care to keep that part of the bandage between your right forefinger, and the roll in your left hand, quite slack; turn your left hand over, and bring the bandage down upon the leg; then pass the roll under the leg towards your right hand, and repeat this until the leg is bandaged up to the knee, taking care not to drag the bandage at any time during the process of the bandaging. When you arrive at the knee, pass the bandage round the leg in circles just below the knee, and pin it as usual. Bandaging is very easy, and if you once see any one apply a bandage properly, and attend to these rules, there will not be any difficulty; but bear one thing in mind, without which you will never put on a bandage even decently, and that is, never to drag or pull at a bandage, but make the turns while it is slack, and you have your right forefinger placed upon the point where it is to be folded down. When a limb is properly bandaged, the folds should run in a line corresponding to the shin-bone. Use—to retain dressings, and for varicose veins.

A bandage for the chest is always placed upon the patient in a sitting posture; and it may be put on in circles or spirally. Use—in fractures of the ribs, to retain dressings, and after severe contusions.

A bandage for the belly is placed on the patient as directed in the last, carrying it spirally from above downwards. Use—to compress the belly after dropsy, or retain dressings.

The hand is bandaged by crossing the bandage over the back of the hand. Use—to retain dressings.

For the head, a bandage may be circular or spiral, or both; in the latter case, commence by placing one circular turn just over the ears; then bring down from left to right, and round the head again, so as to alternate a spiral with a circular turn. Use—to retain dressings on the head, or over the eye; but this form soon gets slack. The circular bandage is the best, crossing it over both eyes.

For the foot, place the end just above the outer ankle, and make two circular turns to prevent its slipping; then bring it down from the inside of the foot over the instep, towards the outer part; pass it under the sole of the foot, and upwards and inwards over the instep towards the inner ankle, then round the ankle and repeat again. Use—to retain dressings to the instep, heel or ankle.

For the leg and foot, commence and proceed as directed in the preceding paragraph; then continue it up the leg, as ordered in the recurrent bandage.

As it sometimes happens that it is necessary to apply a bandage at once, and the materials are not at hand, it is desirable to know how to substitute something else, that any one may apply with ease. This is found to be effected by handkerchiefs, and an experienced surgeon (Mr. Mayor) has paid great attention to this subject, and brought it to much perfection. It is to him, therefore, that we are indebted for most of these hints.

Any ordinary handkerchief will do; but a square of linen folded in various shapes answers better. The shapes generally required are as follows: The triangle, the long square, the cravat, and the cord.

The triangular handkerchief is made by folding it from corner to corner. Use—as a bandage for the head. *Application:* Place the base round the head, and the short part hanging down behind, then tie the long ends over it.

ABRASIONS.

Pyroxyline	200 grains.
Stronger Ether	12½ ounces.
Alcohol	3½ "

Mix the ether and alcohol in a suitable bottle, add the pyroxyline, and dissolve. The above preparation will be found very useful as a dressing for abrasions and wounds.

ABSCESSES.

Take white paint and apply it gently with a brush; or else tincture of arnica, used in the same manner. Apply poultices of linseed meal. Care should be taken not to open an abscess too soon. Dress with spermaceti ointment.

ABORTION.

TO PREVENT.

Fluid Ext. Viburnum Prunifolium	1 ounce.
Simple Syrup	1 "

Mix. *Dose.*—A teaspoonful every two or three hours.

CHILBLAINS.

Inflammation of the skin, owing to sudden change to or from a frosty temperature, occurs usually in females and children with feeble circulation. A congestive stage and ulcerated or broken stage, is plainly marked. It will be found that all the symptoms are aggravated by warmth and luxurious diet, and one feels the trouble increase towards evening.

Treatment.—Take

Sulph. Copper	3 grains.
Water	1 ounce.

Mix. Apply to the affected part; or,

Tinct. Iodine	1 ounce.
Glycerine	1 „

Mix. Paint the affected part: take regular and free exercise, plenty of fresh air, healthy living. A few drops of laudanum at night would help the circulation.

HOW TO DISTINGUISH A FRACTURE OF THE SHOULDER FROM A DISLOCATION.

In a dislocation there is *no* crepitus. In a fracture there *is*.

In a fracture, the bone, when reduced, will *not* remain in place. In dislocation, it *will*.

In dislocation, the patient cannot place the hand upon the opposite shoulder; in fracture, he *can*.

In dislocation forwards, the arm is shortened. In fracture, the arm is lengthened.

In dislocation, first return the bone to its natural position. Let this be done as early as possible, and the sooner the better. One of the great obstacles in the way of reducing a dislocation is the contraction of the muscles. The reduction of the dislocation is generally performed while the patient is under the influence of chloroform or ether, as it has a tendency to relax the muscles. In moderate cases, however, continuous and firm pulling upon the limb will suffice. After the reduction has been accomplished, the limb should be kept perfectly quiet. When there is much pain or swelling, hot fomentations should be applied, or a hot shower upon the limb may be used.

DISLOCATION OF THE JAW.

The jaw is often thrown out of place by yawning, convulsions, or blows on the chin.

It is usually recognised by the chin being thrown to the opposite side, if the displacement occurs but on one side. In wide gaping of the mouth, the dislocation occurs upon both sides at once.

Treatment.—Seat the patient on a low stool, stand in front of him, and then press your thumbs upon the last molar, or grinding teeth, very firmly. Be careful, however, to have your thumbs well protected with wrappings; make a downward pressure. When you hear a snap, it is an indication that the bone is in its natural position. Confine the chin for a week or ten days by a bandage.

DISLOCATION OF THE ELBOW.

When the elbow is dislocated backward, the most common form, the point of the elbow will be found projecting much more than naturally, and it will be impossible to bend the arm more than to a right angle; though it may be drawn out without pain. This dislocation can generally be reduced, very easily, by simply placing the knee in the bend of the elbow and bending the arm around the knee, while pulling upon it with considerable force. After the dislocation is reduced, the arm should be placed in a sling. Hot fomentations should be applied to relieve soreness, and if inflammation threatens, cool or ice compresses should be used as much as possible.

DISLOCATION OF THE HIP.

The simplest plan of treating dislocation of the hip is that known as the automatic method. The patient lies upon the floor on his back. The operator raises the injured limb to a right angle, and places the foot of the patient between his legs in such a way that the back of the foot rests against his sacrum. The limb is then firmly grasped just below the knee, and the patient is lifted until the hip is raised from the floor. The body should be held in this position for a minute or two, by the end of which time the head of the femur will be heard to click into its socket. In case the effort is not successful, both legs should be treated in the same way at once. If neither effort is successful, after several trials, proceed to employ the following method: Let the operator with one hand grasp the affected limb by the ankle, and bend the knee nearly to a right angle, placing the other hand just below the bend of the knee. The knee should now be carried outward, the limb being also twisted in the same direction, and then brought slowly down to its natural position.

DISLOCATION OF THE KNEE-CAP.

This may be dislocated in various directions. It is characterised by the leg being stretched, and a prominence formed by the patella in an abnormal situation.

Treatment.—Raise the patient's leg and rest it upon your shoulder. While in this position, force the bone into its place with the hand.

DISLOCATION AT THE ANKLE.

This may be forwards, backwards, inwards, and outwards, and are the results of severe force. The bones' ends are usually fractured at the same time. It is a very serious accident, and when it occurs to patients whose constitutions are bad, amputation may often be necessary.

Treatment.—Reduction is effected by bending at the knee, and while in that position, drawing the foot forwards.

In all cases of dislocations and fracture communicating with joints, the danger is anchylosis or stiffness of the joints. This is to be obviated by what is called passive motion, which is to be instituted in all cases a few weeks after the accident. It is accomplished by taking hold of the limb and moving it in natural directions, as far as consistent, and repeated after suitable intervals. The patient is to be enjoined, also, when practicable, to exercise his limb at the wounded articulation. There are many other fractures and dislocations that I have not spoken of, for the reason that they are all so serious that the treatment should only be attempted by those having the proper anatomical knowledge and surgical skill.

DISLOCATION AT THE SHOULDER.

This may be displaced in three directions, viz.: inwards, downwards and backwards. By comparing the injured with the sound shoulder you may be able to tell that it is a dislocation. Where the head of the bone ought to be, you will find a depression, and you will most likely find a tumour, near the breast, in the armpit, or towards the back, according to the manner of dislocation.

Treatment.—Lay the person on his back, and sit down beside him on the injured side, and put a round pad in the armpit. Then take off your boot, put your foot against the pad, grasp the patient's arm, or tie a towel to it, put it around your neck, and pull in that way. Then while you pull at the arm and push with your foot, tell the patient to turn round, or you may carry the arm across the chest. While this is done, a snap is heard, and the bone is in its proper place.

DISLOCATION FROM PULLING THE ARM.

This is a form of displacement which occurs in young children, in consequence of being pulled forcibly by the arm. There is still some question among surgeons as to the exact nature of the dislocation; some claiming that the dislocation is at the wrist, and others at the elbow joint. It is probable that either joint may be affected. The hand will be found turned upon the palm, the patient being unable to turn it backward.

Treatment.—All that is necessary is to grasp the hand and forcibly turn it upon the back, which will cause the bones to resume their proper position.

FRACTURE OF COLLAR-BONE.

The collar-bone is generally fractured by indirect violence, such as a fall on the point of the shoulder. It is generally broken near the middle of the bone.

Symptoms.—The patient is usually found supporting the arm with the hand, leaning toward the injured side. The shoulder falls downwards, is sunken and drawn toward the breast bone.

Treatment.—Push the shoulder backwards and press on the seat of fracture, until you get it in its place. Then make a wedge-shaped pad and put it in the armpit, and secure it there by a bandage which surrounds the chest; then bring the elbow to the side and place the fore-arm so tightly in that position that it cannot move. If you follow these simple instructions the cure will be a good one.

DISLOCATION OF THE BONES OF THE HAND.

Displacement of the bones of the carpus or body of the hand rarely occurs. The bones of the fingers are occasionally dislocated, but more frequently the thumb is dislocated backwards.

Treatment.—Make extension in a curved line, by means of a narrow bandage or tape, firmly applied by a close-hitch upon the finger.

DISLOCATION OF THE RIBS.

Dislocation of the ribs from the spinal column may sometimes occur by severe falls, or blows upon the back, and from the breastbone by violent bending of the body backwards. Great pain and difficulty of breathing follow in either case.

Treatment.—Tell the patient to take a deep inspiration, and slightly bend the body backwards, and while he does this, make some pressure on the projecting point. After reduction, treat the same as for broken ribs.

DISLOCATION OF THE WRIST.

This is a very rare displacement, but can be easily discovered by an unnatural position of the hand and total inability to move the wrist joint.

Treatment.—All that is required is firm pulling upon the hand, which causes the displaced bones to slip into position.

FRACTURE OF THE HUMERUS.

The humerus is the bone between the elbow and the shoulder. A fracture of this kind is usually the result of direct muscular action. If, as is usual, the fracture is transverse, there is little displacement.

Treatment.—Place the bones in apposition, and in order to be sure you are right, compare it with the sound arm. Then take four splints and put one in front, one behind, and one on each side of the arm. Secure these with a bandage, and the work is done.

APPARENT DEATH FROM LIGHTNING.

Slip the clothes from the body, and apply cold water, in large quantities, by throwing it over the body briskly, at the same time apply continual friction; administer internally brandy, whisky, hartshorn, or any stimulant you may have on hand. Electricity answers well if it can be procured; administer gentle shocks to the chest until signs of life seem evident. Inflate the lungs by method given under instruction for *drowned* persons.

APPARENT DEATH FROM NOXIOUS VAPOURS.

Men who are employed in underground workings often suffer death from inhaling *bad gases* found at the bottom of old wells and underground excavations. Before commencing work, it is always a good plan to lower a lighted candle to the bottom of a suspected well; if the light is extinguished you may be sure it is not fit to go into. If, however, a person has ventured down, and been overpowered, place the body in the open air, dash cold water over the face, head, and neck, turn the body gently but completely on the side.

APPARENT DEATH FROM HUNGER.

Do not hasten to administer *food* or a fatal result may follow, but first inject, with syringe, a small quantity of mutton broth, or beef tea, and if the patient can swallow, administer, in teaspoonful doses, warm milk, then a little brandy, and so gradually increase the nourishment, as the patient's strength increases. Feed the patient about every ten or fifteen minutes.

CHOKING.

This is an accident that may happen at any moment, while in the act of eating; children, too, are often addicted to putting substances in their mouths, as coins, buttons, etc., as well as attempting to swallow food without properly masticating it.

Treatment.—Slap the patient on the back *smartly*, or press a finger immediately down the throat. Distend the gullet with a draught of water; or better still, warm water and mustard, which will act as a strong emetic.

FRACTURE OF THE BONES OF THE FOREARM.

There are two bones here—the radius and ulna. Both bones are sometimes fractured together. The cause is, generally, direct violence, or, more rarely, a fall on the palm of the hand.

Treatment.—Examine the fracture, and if found oblique and the arm shortened, draw the arm forward and press the muscles into the interosseus space (the space between the bones). Then take two splints, well padded on the inside, reaching from the elbow beyond the fingers; put one on the inside, reaching from the elbow beyond the fingers, and the other on the outside of the forearm. Secure with a bandage. The arm should be carried in a sling.

FRACTURE OF THE LEG.

There are two bones below the knee, called the tibia and the fibula. Either one or both bones of the leg may be broken. The tibia, or inner bone of the leg, is most frequently fractured, on account of being less protected by muscles. When the tibia is broken, it can be very easily discovered by feeling along the shin. The pain is not very severe, but the limb is partially bent, and the patient has no power to extend it. Sometimes the outer bone of the leg is broken at a point about three inches above the ankle, and the inner ankle is either broken or separated from the heel-bone by laceration of the ligaments. This is what is known as Potts' fracture.

Treatment.—When both bones are broken, or when the fibula alone, or when the upper part of the fibula is fractured, the best and most complete apparatus is the fracture-box and pillow. Make a box considerably wider than the leg, with only one end-board, and that considerably higher than the sides of the box. Of course the box must have no lid. A piece of cloth a yard long, and about two feet wide, should be placed in the box, in such a way as to cover the bottom and sides, the edge of the cloth hanging over outside of the box. A quantity of dry bran or sand should next be placed in the box, a sufficient amount being poured in to form a cushion for the foot and lower part of the leg, to the shape of which it should be moulded. Bran or sand should be poured in around the sides of the leg. Bran or sand is necessary only in cases in which there is a wound, which is very frequent in this form of practice. Secure the foot to the foot-board, so as to prevent lateral inclination. Ordinary splints of pasteboard or other material may also be successfully used in case of fracture of the lower end of the fibula, in which the foot is turned to one side. In bandaging, great care must be exercised that the work is done smoothly, and allowance made for the swelling which occurs.

If splints are used, they should be carefully stuffed and applied to the inner side of the limb when the foot is turned, and firmly strapped down in such a manner as to bring it into its natural position.

FRACTURE OF THE BONES IN THE HAND, FOOT, OR ANKLE.

Fractures of the carpal bones are generally compound. When it is a simple fracture little or no treatment is required beyond rest. The solid bones are generally wounded by accidents that tend to crush them, as threshing machinery, heavy weights falling on them, etc.

Treatment.—Dress the open wounds as any other, then cover the whole hand in several folds of rag or handkerchief dipped in water.

FRACTURE OF THE CAP OF THE KNEE.

The knee pan, the cap of the knee, the patella, are but different expressions for the same thing.

The cap of the knee may be broken vertically or transversely. In some cases it is shattered by a severe fall, muscular contractions, or direct violence. There is no crepitation felt in this fracture.

Treatment.—Keep down the swelling with lotions, and the fragments kept together by adhesive plaster. Bind the leg to a long splint placed on the back of the leg.

FRACTURE OF THE RIBS.

Accidents of this kind often happen by direct violence, the ends being driven inwards; sometimes a severe squeeze against a wall, when the ribs give way and the ends are driven outwards.

Symptoms.—Pain at the seat of injury; increased pain on taking a deep inspiration; arrest of the movements of the ribs in breathing. By bending the head and listening you may detect crepitus (a grating sound), and may also detect the fracture by passing one hand over the seat of injury, and the other on the opposite side of the chest.

Treatment.—In a simple fracture, the best plan is to apply strips of plaster two inches broad, stretching from the spine behind to the sternum in front, and extending some inches above and below the site of the fracture. By this means the ribs are kept perfectly at rest on the injured side.

INJURIES TO THE EYES.

BY A BLOW.

A severe blow on the eye will frequently cause hemorrhage to take place, between the choroid and the retina. If the hemorrhage is severe, all useful vision is lost, but if slight, recovery may be looked for with a blind spot corresponding to the detached portion of the retina.

Treatment.—The treatment should consist of a couple of leeches to the temple, ice over the eye, atropine drops, and perfect rest to both eyes.

BY LIME OR MORTAR.

If seen immediately, should be treated by washing out with a tepid solution of vinegar, say one teaspoonful of vinegar to sixteen of water. The upper lid should be averted, all portions remaining in the eye carefully removed; a drop of castor oil may then be put in, and the eye closed with a pledget of wet lint.

BY ACIDS.

When the eye is injured by strong acid it should be syringed out with an alkaline solution.

FORMULA.

Bicarbonate of Soda	5 grains.
Water	1 ounce.

Mix and apply.

The after treatment being the same as that above described.

If the lids are injured with the acid, they should be dressed with the following liniment:

Linseed Oil	4 ounces.
Lime Water	4 ,,
Prepared Chalk	2 ,,

Mix.

Lint dipped in this liniment should be applied over the eye, and a pad of cotton wool placed over it, with a bandage.

BY GUNPOWDER.

When the eye is injured by an explosion of gunpowder, all the loose powder should be carefully removed with a syringe and tepid water. Examine the eye, and remove all particles imbedded in it. Castor oil should then be dropped in, and belladonna lotion applied.

BY PIECES OF METAL.

Pieces of metal and other bodies, as the fragments caused by the explosion of percussion caps, and small shot, very frequently penetrate the eyeball. If the foreign body can be seen, an attempt should be made to remove it.

Treatment.—Draw down the lower lid with the forefinger of the left hand and remove by a piece of moistened paper. If the substance be under the upper lid, place a bodkin across the lid, and draw back the lid so that it is completely inverted. Inflammation is very apt to occur after these accidents.

BLEEDING FROM THE AIR PASSAGES AND LUNGS.

Let the patient at once go to bed, and keep perfectly quiet, avoiding movement of any kind as much as possible. Administer dilute acids, in frequently repeated doses, with five drops of tincture of digitalis. The bowels should be kept open by means of Epsom salts, in infusion of roses. Give iced drinks and let the solid ice be sucked. Mustard plasters may be applied to the chest. A small dose of morphia, say one-sixth of a grain, may be given. The cough must be allayed by the administration of any of the cough mixtures, should the morphia not suffice.

BLEEDING FROM THE NOSE.

Apply cold water containing ice, if obtainable, or a piece of cold metal, to the back of the neck. If this will not suffice, inject with a syringe, a solution of alum, or sulphate of zinc (ten grains to the ounce), or snuff up the nostrils some gallic acid, powder of pomegranate, kino, or catechu, mixed with starch. A plug of lint may also be dipped in either of the above powders and pushed up the nose.

TO CHECK NOSE-BLEED.

Take Monsel's iron solution and apply it with a feather; the wing-feather of a common fowl is most readily obtained. The barbed end, of course, is dipped into the solution and pushed rapidly back into the nostril, and turned once or twice in the fingers. In a few seconds the feather refuses to yield to pushing or pulling, showing that a firm clot has been formed. The projecting end is clipped so as not to inconvenience the patient, enough of it being left to be easily seized and removed when required. If one feather should fail to stop the blood, a second feather may be introduced in the same manner, along side of the first one. At the end of a certain time the clots slough away from the nasal walls, and may be removed without trouble.

SUNSTROKE.

Sunstroke may with much propriety be called congestion of the brain, as the injury done to the brain is much the same, except it may be that no clot is found there.

Harvest hands and all persons exposed to the extreme heat of the sun are liable to be stricken down, and as a prevention ought to wear light clothing.

The symptoms are dizziness, extreme thirst, violent throbbing of the arteries, both corotid and temporal; insensibility ensues by a convulsive shivering.

Treatment. -Carry the patient to a shady place, and instantly apply, copiously, cold water, or what is better, pounded ice in a bag, to the head. Rub the legs briskly with turpentine. Inhalation of ammonia or hartshorn is beneficial, and carbonate of ammonia may be given internally. This treatment must be kept up until the patient is better, or death ensues. When the patient is sufficiently recovered give him a brisk cathartic, and keep him from exposing himself to the sun for a few days.

STABS.

They are treated as common wounds by first stopping the blood, if possible, by the use of cold water and a sponge; and the edges brought together with strapping and bound up. Keep the patient quiet.

INGROWING NAILS.

The best thing to be done is simply to get a common saw file or a piece of glass, and either file or scrape the arch of the nail quite thin, by this means the centre of the nail will eventually be rendered so thin that it may be readily bent. Now raise the sides of the nail and insert in the grove between it and the flesh a thin layer of cotton wool. Nails should never be clipped at the corners, but cut straight across the top, if anything, slightly scooped in the middle.

APPARENT DEATH FROM COLD.

A person apparently dead from cold must not be taken to a hot fire; that would be very wrong. The best thing you can do is to rub the body of the person with snow, ice, or cold water, and after a time apply a very gentle heat, and proceed according to the directions laid down in the article on drowning.

APPARENT DEATH FROM A BLOW OR FALL.

In an emergency of this kind prompt means must be resorted to. Place the patient on a couch in a recumbent position, with the head raised. Dash cold water on the face, and administer stimulants such as brandy, hartshorn, etc., and apply warmth to the feet and legs. Keep the patient quiet.

CUT THROAT.

In cut throat, the first thing to be done is to search for all bleeding vessels, veins as well as arteries, and either twist or tie them. The danger is from hemorrhage, suffocation from blood clot, or by entrance of air into a divided vein. If the blood is of a dark colour and *gushes* out, there is a vein severed; but if the blood is red (arterial blood), and *spurts*, an artery has been severed, and must be tied. In case of the severance of a superficial vein, place the fingers on the course of the veins, a little above the cut, between it and the head, and keep a firm, though gentle pressure. If the trachea (windpipe) is entirely divided, the divided edges may be kept together by some sutures. *On no account apply sutures to the external wound.* Place the patient in bed with the shoulders well raised, and the head thrown forward on the chest, and secured there by tapes passing from a night cap to a roller round the chest. Of course you would call a doctor as soon as possible.

HOW TO ACT WHEN THE CLOTHES TAKE FIRE.

The *Scientific American* says three persons out of four would rush right up to the burning individual, and begin to paw with their hands, without any definite aims. It is useless to tell the victim to do this or that, or call for water. In fact, it is generally best not to say a word, but to seize a blanket from a bed, or a cloak, or any woollen material at hand, hold the corners as far apart as you can, stretch them out higher than your head, and running boldly to the person, make a motion of clasping in the arms, mostly about the shoulders. This instantly smothers the fire, and saves the face. At the same time throw the unfortunate person on the floor. This is an additional safety to the face and breath, and any remnant of flame can be put out more leisurely. The next instant immerse the burnt part in cold water, and all the pain will cease with the rapidity of lightning. Next get some common flour, and cover the burnt parts thickly with it, put the patient in bed, and do all that is possible to soothe until the physician arrives. Let the flour remain until it falls off, and a beautiful new skin will be found. Unless the burns are deep, no other application is needed. The dry flour for burns is the most admirable remedy ever proposed, and the information ought to be imparted to all. The principle of its action is that, like water, it causes instant and perfect relief from pain, by totally excluding the air from the injured parts. Spanish whiting and cold water, of a consistency of porridge, are preferred by some. Spread on the flour until no more will stick, and cover with cotton batting. Within the last few months, the medical profession has used the bicarbonate of soda (bread soda), as an application to burns and scalds. Its efficacy is really wonderful. Try it.

CURE FOR DRUNKENNESS.

There is a famous prescription in general use for the cure of drunkenness, by which thousands are said to have been assisted in recovering themselves. The receipt came into notoriety through the effects of John Vine Hall, commander of the steamship *Great Eastern*. He had fallen into such habitual drunkenness that his most earnest efforts to reclaim himself proved unavailing. At length he sought the advice of an eminent physician, who gave him a prescription, which he followed faithfully for seven months, and at the end of that time had lost all desire for liquor, although he had been for many years led captive by a most debasing appetite. The receipt which he afterwards published, is as follows: Five grains of sulphate of iron, ten grains of magnesia, eleven drachms of peppermint water; use twice a day. This preparation acts as a tonic and stimulant, and so partially supplies the place of accustomed liquor, and prevents the absolute physical and moral prostration that follows a sudden breaking off the use of stimulating drinks.

The following is said to be a cure for the appetite or disease of drunkenness: Five grains of sulphate of iron, ten grains of magnesia, eleven drachms of peppermint water, and one drachm of spirit of nutmeg, twice a day

TO EXTRACT SUBSTANCES FROM THE NOSE.

When a child has any substance wedged in its nostrils, press the vacant nostril so as to close it, and apply your lips close to the child's mouth, and blow very hard. This simple method will generally force the substance out of the nostril.

PARTIAL DISLOCATION OF THE NECK.

To reduce this dislocation, the unhappy person should immediately be laid on his back upon the ground, and the operator must place himself behind him, so as to be able to lay hold of his head with both hands, while he makes a resistance by placing his knees against the patient's shoulders. In this posture, he must pull the head with considerable force, gently twisting it at the same time, if the face be turned to one side, till he perceives that the joint is replaced, which may be known from the noise which the bones generally make when going in, the patient beginning to breathe, and the head continuing in its natural posture.

TO STOP BLEEDING FROM WOUNDS.

Bleeding from a wound on man or beast may be stopped by a mixture of wheat flour and common salt in equal parts, bound on with cloth. If the bleeding be profuse, use a large quantity—say from one to three pints. It may be left on for hours, or even days, if necessary. In this manner, the life of a horse was saved which was bleeding from a wounded artery. The bleeding ceased in five minutes after the application. It was left on for three days, when it worked loose, and was easily removed from the wound, which very soon healed.

ANOTHER REMEDY.

Take of brandy or common spirits two ounces, Castile soap two drachms, and potash one drachm; scrape the soap fine, and dissolve it in the brandy, then add the potash; mix well, and keep in a close phial. When applied, let it be warmed, and dip pledgets of lint, and the blood will immediately congeal. It operates by coagulating the blood a considerable way within the vessel. A few applications may be necessary for deep wounds, and where limbs are cut off.

ANOTHER REMEDY.

Take the fine dust of tea, or the scrapings of the inside of tanned leather, and bind it close upon the wound, and the blood will soon cease to flow. These articles are at all times accessible, and easy to be obtained.

DROWNING.

Rules to be observed for the recovery of persons apparently drowned.—The body should be moved with all speed to the nearest house, unless too far, and after being stripped and dried, it should be placed in bed, between blankets, the head being slightly raised, whilst hot bricks and bottles are being got ready to place to the feet and abdomen. Artificial respiration should be commenced by means of a bellows, until a physician arrives with a proper apparatus. Mustard poultices should be applied to the abdomen, friction with hartshorn to the chest, and an injection administered, composed of turpentine and gruel or hot water and spirits. Hartshorn to the nose is useful. When signs of animation begin to appear, a teaspoonful of brandy and water should be given, but do not force it down the throat. It is foolish to attempt to bleed.

The late Doctor Valentine Mott gives the following directions:—"Immediately the body is removed from the water, press the chest suddenly and forcibly downward and backward, and instantly discontinue the pressure. Repeat this violent interruption until a pair of bellows can be procured. When obtained, introduce the muzzle well under the base of the tongue. Surround the mouth with a towel or handkerchief, and close it. Direct a bystander to press firmly on the projecting part of the neck (Adam's apple), and use the bellows actively; then press upon the chest, to expel the air from the lungs, to imitate the natural breathing. Continue this at least one hour, or until signs of natural breathing come on. Wrap the body in blankets, place it near a fire, and do everything to preserve the natural warmth, as well as to impart an artificial heat, if possible. Everything, however, is secondary to inflating the lungs. Send for a medical gentleman immediately, and avoid all friction until respiration shall be in some degree restored."

FROZEN LIMBS.

When any part of the body is frozen, it should be kept perfectly quiet till it is thawed out, which should be done as promptly as possible. As freezing takes place from the surface inwardly, so thawing should be in the reverse order, from the inside outwardly. The thawing out of a portion of flesh, without at the same time putting the blood from the heart into circulation through it, produces mortification; but by keeping the more external parts still congealed till the internal heat and the external blood gradually soften the more interior parts, and produce circulation of the blood as fast as thawing takes place, most of these dangers are obviated.

Raw cotton and castor oil have restored frost-bitten limbs when amputation was thought to be necessary to preserve life. It is said to be an infallible cure.

FOR A FISHBONE IN THE THROAT.

If any person should become choked with a fishbone, and cannot cough it out, or otherwise easily remove it from the throat, let him take the white of three or four eggs, and if that does not carry the bone down into the stomach (and perhaps it would be best that it should not carry the bone down), let him take immediately from a teaspoonful to a tablespoonful of ground mustard in a little warm water, which will be pretty certain to make him vomit almost immediately, and as the eggs are thrown from the stomach they will be very likely to carry the bone from the throat. If no mustard is at hand, take some other quick emetic.

SNAKE BITE.

It is said that alum is a sure antidote to the bite of a rattlesnake. Take a piece about the size of a walnut and dissolve and drink it. This, it is said, will cure either man or beast. It would be a good idea for those who are in the habit of going into dangerous places to carry a piece of alum in their pockets, so as to be in readiness for the emergency of a bite. It is a simple remedy, but we have no doubt of its efficacy.

ANOTHER.

The *New Albany Bulletin* says: We learn that a lady resident of this county was bitten by a snake of the copper-head kind, in the foot, a few days since, which caused such excruciating pain as to give her friends serious apprehension, for a time, of her recovery. An experiment was, however, resorted to, which resulted in a cure. The snake was killed, cut to pieces, and bound to the wound, which in a short time extracted the poison, and the lady is now convalescent."

CURE FOR RATTLESNAKE BITES AND OTHER POISONOUS CREATURES.

Indigo four drachms, gum camphor eight drachms, alcohol eight ounces; mixed and kept in close bottles. Apply to the wound, and the cure is soon completed.

ANOTHER.

Take green horehound tops, pound them fine, press out the juice, let the patient drink a tablespoonful of the juice morning, noon and night, or three times in twenty-four hours. Apply the pounded herbs to the bite; change the same twice a day. The patient may drink a spoonful of sweet olive oil. This never fails to cure.

ELIXIRS.

This is a term applied in pharmacy to various compound sweetened tinctures or cordials, and to preparations supposed to contain the quintessence of other substances. The elixirs of the alchemists were solutions, employed in their fruitless attempts to transmute the baser metals into gold.

The indicated elixirs of the present day, when properly made, form a certain, convenient and agreeable method of administering a large class of important remedies, and are fast coming into favour throughout the civilised world.

SIMPLE ELIXIR, No. 1.

Fresh Orange Peel	120 grains.
Cardamoms	20 "
Star Anise	30 "
Simple Syrup	5 fl. ounces.
Alcohol	4 " "
Water	9 " "

Exhaust the aromatics with the alcohol and water. Mix and add the syrup; colour with carmine, if desired.

SIMPLE ELIXIR, No. 2.

Cinnamon	1½ drachm.
Star Anise	1 "
Coriander	1½ "
Nutmeg	½ "
Caraway	1½ "
Oil of Sweet Orange	½ "
Dilute Alcohol	2 pints.
Syrup	2 "

Percolate the aromatics with the dilute alcohol previously mixed with the oil of orange, continuing the percolation until two pints of aromatic tincture are obtained, and mix with the syrup.

SIMPLE ELIXIR, No. 3.

Alcohol	4 ounces.
Water	9 "
Sugar	4½ "
Oil of Sweet Orange	½ drachm.
Oil of Caraway	15 drops.
Oil of Coriander	10 "
Oil of Cassia	10 "

Mix and shake with paper pulp, or rub with one ounce of carbonate of magnesia, and filter.

ELIXIR OF LACTOPEPTINE AND BISMUTH.

Lactopeptine	1 ounce.
Cit. of Bismuth and Ammonia	128 grains.
Aqua Ammonia, q. s.	
Boiling Water, q. s.	
Simple Elixir, to make	1 pint.

Dissolve the bismuth and ammonia in a little boiling water, adding a few drops of aqua ammonia to clarify.

Macerate the lactopeptine for twenty-four hours in a portion of the elixir.

Mix and filter.

Each fluid drachm contains one grain of bismuth and three grains of lactopeptine.

NOTE.—For properties and uses, see elixir lactopeptine.

Dose.—One to two teaspoonfuls.

ELIXIR OF MANDRAKE COMP.

Mandrake	each in coarse powder	640 grains.
Senna		640 "
Dilute Alcohol		1 pint.
Sugar		6 ounces.
Prepared Flavouring		1 "

Percolate the powders with diluted alcohol until thirteen ounces are made; then add the sugar and the prepared flavouring, and filter.

Each fluid drachm contains five grains each of mandrake and senna.

Properties. Cathartic, emetic, alterative, anthelmintic, hydragogue, and sialagogue.

Uses.—In chronic liver diseases; in bilious and typhoid fevers.

Dose.—One to two teaspoonfuls.

PREPARED FLAVOURING.

Oil Coriander	1 drachm.
Oil Anise	½ "
Oil Sweet Orange	2 ounces.
Oil Cinnamon	½ drachm.
Oil Cloves	10 drops.
Alcohol	1 pint.

Mix.

This and the preceding formula will both be found useful in making some of the medicated elixirs which follow.

PERCOLATING MENSTRUUM.

Alcohol	40 ounces.
Water	4½ pints.

Mix and filter through carb. magnesia.

STOCK SOLUTION FOR SIMPLE ELIXIR.

Oil Orange	½ drachm.
Oil Coriander	15 drops.
Oil Cassia	15 ,,
Oil Caraway	5 ,,
Oil Anise	10 ,,
Oil Nutmegs	5 ,,
Alcohol	2½ ounces.

Mix.

To make simple elixir with the above, use

Stock Solution	1 drachm.
Alcohol	4 ounces.
Water	10½ ,,
Sugar	3 ,,
Carbonate Magnesia, q. s.	

ELIXIR CALISAYA WITH HYPOPHOSPHITES.

Hypophosphite of Calcium	256 grains.
Hypophosphite of Sodium	256 ,,
Fluid Extract of Calisaya	2 ounces.
Simple Elixir	14 ,,

Rub the salts very fine and dissolve in separate portions of elixir, and filter. Each fluid drachm contains about five grains of calisaya and two grains each of the hypophosphite of lime and of soda.

Properties.—Tonic and antiperiodic.

Uses.—Extensively used in tuberculosis, and as a remedy for defects in the osseous system, and as a remedy in phthisis.

Dose.—One teaspoonful.

ELIXIR CALISAYA WITH LACTOPHOSPHATE OF LIME.

Solution Phos. Lime (see solutions)	1 ounce.
Fluid Extract Calisaya Bark	2 ,,
Simple Elixir	14 ,,

Mix and filter.

Each fluid drachm contains one grain of lactophosphate of lime and about five grains of calisaya bark.

Properties.—Tonic, antiperiodic.

Uses.—In tuberculosis and defects in the osseous system and as a remedy in phthisis.

Dose.—One teaspoonful.

ELIXIR STRYCHNIA, QUINIA AND BISMUTH.

Sulphate of Quinia	128 grains.
Sulphate of Strychnia	1 ,,
Citrate of Bismuth	128 ,,
Aqua Ammonia, q. s.	
Citric Acid	10 ,,
Simple Elixir, to make	1 pint.

Take two separate portions of the elixir; in one dissolve the citric acid, and in the other rub the quinia.

Dissolve the citrate of bismuth in a little hot water, having previously reduced it to a fine powder, and add a little aqua ammonia to clarify.

Dissolve the strychnia in a little hot water and alcohol and a few grains of citric acid, previously dissolved in the water.

Mix the solutions and balance of elixir, and filter.

Each fluid drachm contains 1 grain of quinia, 1·128 grain strychnia, and 1 grain of citrate of bismuth.

Properties.—Powerfully tonic, and stimulant, and stomachic.

Uses.—In intermittent and remittent fevers, gout, rheumatism, pyrosis, dyspepsia, and in cases of partial paralysis.

Dose.—One to two teaspoonfuls.

ELIXIR LACTOPEPTINE.

Lactopeptine	640 grains.
Simple Elixir	1 pint.

Macerate the lactopeptine for twenty-four hours in the elixir, and filter.

Each fluid drachm contains 5 grains of lactopeptine.

Properties.—Absorbent, sedative.

Uses.—Employed with great success in dyspepsia, gastralgia, and general debility of the system, and in all the numerous disorders dependent on want of tone and vigour of the stomach and digestive organs.

Dose.—One teaspoonful.

ELIXIR PEPSIN.

Saccharated Pepsin	256 grains.
Muriatic Acid, q. s.	
Glycerine	2 ounces.
Simple Elixir, to make	1 pint.

Shake the pepsin in a portion of the elixir, and add sufficient muriatic acid, about two drachms; when all is completely dissolved, add the glycerine and balance of the elixir and filter.

Each fluid drachm contains two grains of pepsin.

Dose.—One to three teaspoonfuls.

Uses.—For indigestion, dyspepsia, vomiting, in pregnancy, cholera infantum, and all diseases arising from imperfect nutrition.

ELIXIR PEPSIN AND BISMUTH.

Cit. of Bismuth and Ammonia	256 grains.
Warm Distilled Water	1 ounce.
Water of Ammonia	sufficient.
Elixir of Pepsin	15 ounces.

Dissolve the bismuth in the warm water, adding aqua ammonia sufficient to neutralise. Mix with elixir and filter.

Each fluid drachm contains two grains of bismuth and two grains of pepsin.

Properties.—Tonic, antispasmodic, stomachic.

Uses.—Indigestion, dyspepsia, cholera infantum, nausea, imperfect nutrition.

Dose.—One to two teaspoonfuls.

ELIXIR PEPSIN AND STRYCHNIA.

Hall's Solution of Strychnia	2 fl. ounces.
Elixir Pepsin	14 „ „

Mix.

Each fluid drachm contains $\frac{1}{64}$ grain of strychnia and 2 grains of pepsin.

Properties.—Powerful tonic, antispasmodic, stomachic.

Uses.—This elixir increases the appetite and aids digestion, and is very valuable in diarrhœa.

Dose.—One teaspoonful; can increase to two.

ELIXIR PEPSIN, BISMUTH AND STRYCHNIA.

Cit. Bismuth and Ammonia	256 grains.
Hall's Solution of Strychnia	2 ounces.
Warm Water	1 „
Elixir Pepsin	13 „

Dissolve the bismuth in the water, by the aid of a few drops of aqua ammonia.

Mix and filter.

Each fluid drachm contains 2 grains of bismuth, 2 of pepsin, and $\frac{1}{64}$ of a grain of strychnia.

Uses.—It has been found very useful in dyspepsia, gastralgia, general debility of the system, and in all the numerous disorders dependent on want of tone and vigour of the stomach and digestive organs.

Dose.—One teaspoonful.

ELIXIR PEPSIN, BISMUTH AND IRON.

Citrate of Iron and Ammonia	256 grains.
Elixir Pepsin and Bismuth	1 pint.

Dissolve the iron in hot water, add the elixir and filter.

Each fluid drachm contains two grains of iron, two of bismuth, and two of pepsin.

Uses.—See previous formula.

Dose.—One teaspoonful.

ELIXIR PEPSIN, BISMUTH, IRON AND STRYCHNIA.

Citrate of Bismuth and Ammonia	256 grains.
Citrate of Iron and Ammonia	256 „
Hall's Solution of Strychnia	2 ounces.
Elixir Pepsin, q. s. to make	1 pint.

Rub the bismuth to a fine powder and add it gradually to about one ounce of hot water; then add a few drops aqua ammonia to make clear.

Dissolve the iron in one ounce of hot water; mix and filter.

Each fluid drachm contains 2 grains of bismuth, 2 of iron and 2 of pepsin, with $\frac{1}{64}$ grain of strychnia.

Properties and Uses.—For properties and uses, see formula for pepsin, bismuth, and strychnia.

Dose.—One teaspoonful.

ELIXIR PEPSIN, IRON AND STRYCHNIA.

Hall's Solution of Strychnia	2 ounces.
Elixir of Pepsin	14 „
Citrate of Iron and Ammonia	256 grains.

Mix and filter.

Each fluid drachm contains $\frac{1}{64}$ grain of strychnia, 2 grains of pepsin, and 2 of iron.

Dose.—One teaspoonful.

ELIXIR TARAXACUM COMPOUND.

Fluid Extract Dandelion	6 fl. drachms.
Fluid Extract Wild Cherry	4 „
Fluid Extract Gentian	30 drops.
Fluid Extract Licorice	30 „
Simple Elixir	14½ ounces.

Mix.

Properties.—Stomachic, tonic, diuretic, and slightly aperient.

Uses.—Recommended in torpor and engorgement of the liver, as well as of the spleen. In uterine obstruction, chronic diseases of the skin, jaundice and dropsy.

Dose.—One to two teaspoonfuls.

ELIXIR PEPSIN AND QUINIA.

Sulphate of Quinia	256 grains.
Aromatic Sulphuric Acid, q. s.	
Elixir of Pepsin	1 pint.

Dissolve the quinia in just enough acid to cut it; add to the elixir of pepsin and filter.

Each fluid drachm contains two grains of sulphate of quinia, and two grains of pepsin.

Dose.—One teaspoonful.

ELIXIR PHOSPHORUS.

Phosphorus	2 grains.
Sulphuric Ether (Concentrated)	1 fl. drachm.
Alcohol	1 fl. ounce.
Glycerine	3 ounces.
Simple Elixir, to make	1 pint.

Dissolve the phosphorus in the ether by allowing it to stand twenty-four hours; introduce no water; next add the alcohol, then the glycerine, very gradually; shake after each addition; lastly add the elixir.

Each fluid drachm contains $\frac{1}{64}$ grain of phosphorus.

Properties.—A powerful stimulant particularly of kidneys and genitals.

Uses.—To relieve irritation of the bladder, prostate testes and urethra, and to improve the nutrition of the nervous system.

Dose.—One to two teaspoonfuls.

ELIXIR LACTATE OF IRON.

Solution of Protoxide of Iron (See Solutions)	1 ounce.
Lactic Acid Concentrated	1½ drachm.
Elixir to make	1 pint.

Mix and filter. Each fluid drachm contains nearly one grain of lacto-citrate of iron.

Properties.—Astringent, tonic, etc.

Uses.—Recommended in chlorosis, anæmia, amenorrhœa.

Dose.—One teaspoonful.

ELIXIR LACTOPHOSPHATE OF IRON AND LIME.

Solution of Lactophosphate of Lime .	1½ ounce.
Solution of Lactophosphate of Iron .	½ ,,
Solution of Phosphoric Acid . .	½ ,,
Simple Elixir, to make . . .	1 pint.

Mix and filter.

Each fluid drachm contains two grains of the lactophosphate of iron and the lactophosphate of lime combined.

Properties.—Tonic, astringent, stomachic.

Uses.—Recommended in cases of deficient nutrition, in the different forms of scrofula, phthisis and dyspepsia.

Dose.—One teaspoonful.

ELIXIR IODIDE OF CALCIUM.

Iodide of Calcium	256 grains.
Simple Elixir	1 pint.

Dissolve the iodide in the elixir and filter.

Each fluid drachm contains 2 grains of iodide of calcium.

Properties.—Stimulant, absorbent, alterative.

Uses.—In scrofula, bronchocele and chlorosis.

Dose.—One teaspoonful.

ELIXIR IODIDE OF POTASSIUM.

Iodide of Potassium . . .	512 grains.
Simple Elixir	1 pint.

Disolve the iodide in the elixir and filter.

Each fluid drachm contains 4 grains of iodide of potassium.

Properties.—The same as that of iodine, but chiefly as an alterative in secondary syphilis, rheumatism, lepra, bronchocele and other glandular swelling.

Uses.—Highly recommended in intermittent and remittent fevers, where quinine cannot be tolerated.

Dose.—One to two teaspoonfuls.

ELIXIR GENTIAN AND BISMUTH.

Citrate of Bismuth and Ammonia .	384 grains.
Elixir of Gentian	1 pint.

Dissolve the bismuth by the aid of a little hot water, first rubbing it to a fine powder in a mortar, and clarify by adding a few drops of aqua ammonia. Mix and filter.

Each fluid drachm contains 3 grains of bismuth and 3 grains of gentian.

Properties.—A powerful tonic; improves the appetite; antispasmodic; astringent.

Uses.—In dyspepsia, diarrhœa, general debility, great exhaustion, jaundice, hysteria.

Dose.—One teaspoonful.

ELIXIR GENTIAN AND STRYCHNIA.

Fluid Extract of Gentian . .	4 ounces.
Hall's Solution of Strychnia . .	2 ,,
Simple Elixir, to make . . .	1 pint.

Mix and filter.

Each fluid drachm contains 15 drops of the fluid extract of gentian, and $\frac{1}{64}$ grain of strychnia.

Properties.—Tonic, antispasmodic.

Uses.—Recommended in diarrhœa, great general prostration, and as a powerful tonic where strychnia is indicated.

Dose.—One teaspoonful.

ELIXIR GENTIAN, IRON AND BISMUTH.

Citrate of Bismuth and Ammonia .	256 grains.
Elixir Gentian and Iron . . .	15 ounces.

Dissolve the bismuth in one ounce of hot water; add to the elixir and filter.

Each fluid drachm contains 2 grains of bismuth, 1 of iron, and 3 of gentian.

Its properties and uses are similar to the previous formula.

Dose.—One teaspoonful.

ELIXIR DANDELION COMP.

Dandelion Root	6 ounces.
Wild Cherry Bark	1 ,,
Gentian Root	1 ,,
Orange Peel	2 ,,
Cinnamon Bark	1 ,,
Coriander Seeds	1 ,,
Anise Seed	2 drachms.
Caraway Seed	2 ,,
Licorice Root	2 ,,
Simple Syrup	1 ounce.
Alcohol, Water, of each sufficient.	

Exhaust the powdered drugs by percolation with enough of a mixture of one volume of alcohol to three of water to obtain 6½ pints of percolate; mix this with the simple syrup and filter.

This elixir will be found an excellent preparation in which to administer quinine, and to disguise its taste.

ELIXIR GENTIAN AND IRON.

Pyrophosphate of Iron . . .	256 grains.
Elixir of Gentian	1 pint.

Dissolve the iron in a little hot water. Mix and filter.

Each fluid drachm contains 2 grains of the pyrophosphate of iron, and about 3 grains of gentian.

Properties.—See Elixir of Gentian below.

Uses.—See Elixir of Gentian below.

Dose.—One teaspoonful.

ELIXIR OF GENTIAN FERRATED.

Extract of Gentian	128 grains.
Simple Elixir	15 ounces.
Warm Water	4 drachms
Muriatic Acid	66 drops.
Water	4 drachms.
Iron Filings	1 ,,

Dissolve the extract in the warm water and add it to the elixir. In a glass mattrass place the iron filings with the acid and water, and when the evolution of gas has nearly ceased, bring the liquid to a boiling point and filter; add the filtrate to the elixir, and filter again through paper.

Properties. A powerful tonic; improves the appetite and helps digestion.

Uses.—In exhaustion, dyspepsia, debility, gout.

Dose.—One to two teaspoonfuls.

ELIXIR MURIATE OF IRON—TASTELESS.

Citrate of Potassium . . .	400 grains.
Tinct. Muriate of Iron . . .	640 drops.
Elixir. q. s. to make . . .	1 pint.

Dose.—One teaspoonful.

ELIXIR OF GENTIAN WITH CHLORIDE OF IRON.

Ext. of Gentian (solid) . .	128 grains.
Warm Water	½ ounce.
Tincture Chloride of Iron . .	½ ,,
Simple Elixir	15 ,,

Dissolve the extract in the hot water, add the elixir, and lastly the tincture. Filter.

Dose.—One teaspoonful.

ELIXIR OF SULPHATE CINCHONIA.

Simple Elixir	15 ounces.
Sulphate Cinchonia	256 grains.
Water (hot)	1 ounce.
Aro. Sulph. Acid, q. s.	

Dissolve the cinchonia with the acid and water, and add the elixir. Colour with tincture of carmine.

Dose.—One teaspoonful.

ELIXIR LICORICE AROMATIC.

Licorice Root	32 ounces.
Caraway Seed	6 drachms.
Star Anise	16 ,,
Coriander	10 ,,
Cinnamon	16 ,,
Water	16 pints.
Alcohol	4 ,,
White Sugar	80 ounces.

Macerate the aromatics with two pints of alcohol and one of water for seven days, frequently agitating; transfer them to a percolator and when the liquid ceases to drop add enough of the same menstruum to complete three pints of percolate. Digest the licorice with the water for two hours, then bring to the boiling point, and boil for fifteen minutes, when cold express strongly, and mix the decoction with the aromatic percolate, set aside for twenty-four hours and filter. Mix the sugar with the filtrate, agitate till it is dissolved, add the remainder of the alcohol and filter again.

Uses.—Chiefly as an aromatic, and to disguise the taste of bitter or nauseous medicines.

ELIXIR VALERIANATE OF AMMONIA.

Crystallised Valerianate of Amm. .	256 grains.
Comp. Tincture of Cochineal . .	½ fl. dr.
Simple Elixir	15½ ounces.

Dissolve the valerianate in two ounces of the elixir, add water of ammonia q. s. to neutralise, then add the rest.

Each fluid drachm contains 2 grains valerianate of ammonia.

Properties.—Antispasmodic and nervous stimulant.

Uses.—Intermittent, and as a nervous tonic.

Dose.—One to two teaspoonfuls.

ELIXIR VALERIANATE OF QUININE.

Valerianate of Quinine . . .	128 grains.
Citric Acid, sufficient, or . . .	10 ,,
Simple Elixir	1 pint.

Dissolve the valerianate of quinine and citric acid in the elixir and filter.

Each fluid drachm contains 1 grain of valerianate of quinine.

Properties.—It exerts the combined influence of quinine and valerianic acid, tonic, antiperiodic.

Uses.—Intermittent and as a nervous tonic.

Dose.—One to two teaspoonfuls.

ELIXIR EUCALYPTUS AND IRON.

Fluid Extract of Eucalyptus . .	1 ounce.
Pyrophosphate of Iron . . .	256 grains.
Hot Water, q. s.	
Simple Elixir, to make	1 pint.

Dissolve the pyrophosphate in about one ounce of hot water. Mix and filter.

Each fluid drachm contains about 4 grains of eucalyptus and 2 grains of iron.

Properties.—Tonic, astringent, febrifuge.

Uses.—Useful in all kinds of fevers.

Dose.—One or two teaspoonfuls.

RHEUMATIC ELIXIR.

Salicylate of Soda	6 drachms.
Fluid Ext. Black Cohosh. . .	1½ ounce.
Fluid Ext. Colchicum Seed . .	½ ,,
Acetate Potassium	1½ ,,
Comp. Tinct. Cardamom . . .	1 ,,
Simple Elixir, to make . . .	1 pint.

Mix and filter.

Dose.—One teaspoonful.

COMPOUND ELIXIR OF SENNA.

Extract of Senna (solid) . . .	6 drachms.
Extract of Aloes	6 ,,
Carbonate of Soda (crystals) . .	1 ,,
Anise Seed	1 ,,
Caraway Seed	1 ,,
Cardamom Seed	1 ,,
Simple Syrup	4 ounces.
Alcohol, q. s.	
Simple Elixir, to make . . .	1 pint.

Macerate the drugs with alcohol and percolate till six ounces are obtained, add simple elixir and filter.

Dose.—One teaspoonful. An excellent cathartic.

ELIXIR PYROPHOSPHATE OF IRON, QUININE AND STRYCHNIA.

Sulphate of Quinine	64 grains.
Stychnia	1 ,,
Citric Acid	5 ,,
Stronger Alcohol	3 fl. ounces.
Spirits of Orange	80 drops.
Syrup	6 fl. ounces.
Pyrophosphate of Iron	256 grains.
Distilled Water	7 fl. ounces.
Water of Ammonia, q. s.	

Triturate the sulphate of quinine, strychnia and citric acid together until minutely divided, then add the alcohol and spirits of orange. Warm the syrup slightly to about 150° Fahr., and add to the turbid mixture, when, upon stirring, the mixture becomes clear. To this add the pyrophosphate of iron, previously dissolved in the distilled water, and finally carefully add water of ammonia, drop by drop, until the elixir is perfectly neutral to test paper. Filter. The finest preparation has a greenish-yellow colour, a pleasant flavour of orange, and is permanent.

This preparation is also known as "Phosphate of Iron, Quinine and Strychnia," and is as valuable in every particular.

Each fluid drachm contains $\frac{1}{2}$ grain of quinine, 2 grains pyrophosphate of iron, and $\frac{1}{128}$ grain of strychnia.

Properties.—Strongly and permanently tonic and antiperiodic.

Uses.—An excellent preparation in all kinds of febrile affections, remittent and intermittent fever, etc.

Dose.—One to two teaspoonfuls.

ELIXIR RHUBARB AND MAGNESIA.

Carbonate of Magnesia	3 drachms.
Citric Acid, about	4 ,,
Elixir Rhubarb	1 ,,
Simple Elixir	15 ounces.

Rub the carbonate of magnesia with one ounce of elixir, and having previously dissolved the citric acid in a small portion of elixir, add it gradually to the carbonate of magnesia. After it has ceased effervescing, add the elixir of rhubarb, and filter.

Properties.—The above elixir is stomachic, purgative, according to the dose employed.

Uses.—In dyspepsia, debility of the intestines, flatulent colic, diarrhœa, costiveness of old people.

Dose.—One or two tablespoonfuls.

ELIXIR CALISAYA BARK (DETANNATED).

Calisaya Bark (coarse powder)	640 grains.
Percolating Menstruum	1 pint.
Sugar	6 ounces.
Prepared Flavouring	1 ,,

Percolate the powder with the percolating menstruum until thirteen ounces are obtained; to this add about one ounce of white of egg, or sufficient to deprive it of its cincho-tannic acid. The absence of the latter is readily ascertained by the addition of a drop of muriate tincture of iron to a filtered portion of the liquid treated, which should not be coloured by such admixture. Should colouration result, the degree of faintness will serve as a guide to the further quantity of albumen necessary to completely detannate the preparation. We can lay down no absolute rule as to the necessary amount of albumen which may be required in the process of detannating, as it depends on the astringent quality of the bark, which is not always the same. Should too much albumen be added to the filtrate, precipitate the albumen with about five grains of citric acid; and where too much acid is present, filter through magnesium. Lastly, add the sugar and prepared flavourings.

Properties.—Strongly and permanently tonic and antiperiodic.

Uses.—In intermittents, cynanche maligna, scarlatina, and in every disease attended with deficient action.

Dose.—One to two teaspoonfuls.

ELIXIR OF QUININE.

Sulphate of Quinine	128 grains.
Citric Acid	22 ,,
Aqua Ammonia	q. s.
Simple Elixir, to make	1 pint.

Take two portions of elixir, in one dissolve the citric acid, and in the other dissolve the quinine, by rubbing in the mortar. Mix the solutions, and add the balance of the elixir; lastly, add aqua ammonia, a few drops at a time, till the solution is clear. Take care not to add any more ammonia than is actually needed to clarify, otherwise the excess of ammonia will precipitate the quinine. Use a little test paper. It is a good plan to mix the aqua ammonia with about twice as much elixir before adding it to the solutions.

Properties.—Antiperiodic, tonic.

Uses.—In febrile diseases; intermittent and remittent fevers.

Dose.—One to two teaspoonfuls.

ELIXIR CALISAYA BARK (DETANNATED). NO. 2.

Calisaya Bark (in fine powder)	24 ounces.
Bitter Orange Peel ,, ,,	16 ,,
Coriander Seed ,, ,,	4 ,,
Cardamom Seed ,, ,,	1 ,,
Ceylon Cinnamon ,, ,,	3 ,,
Anise Seed ,, ,,	1 ,,

Exhaust the powdered drugs with a mixture of one part, by measure, of alcohol, and three of water; so as to obtain twenty pints of percolate. From six pints of the officinal solution of tersulphate of iron prepare hydrated oxide of iron; wash it well; measure it, and to every four measures, add one measure of alcohol; then add of this to the percolate sufficient to deprive it of its cincho-tannic acid. The absence of the latter can be readily ascertained by the addition of a drop of muriate tincture of iron (as shown in the previous formula) to filtered portion of the liquid treated, which should not be coloured by such admixture. If colouration is exhibited, sufficient oxide of iron must be added to completely detannate the preparation. As soon as the result is obtained, the mixture is thrown in a muslin strainer, and when the liquid ceases to pass, the residue is washed on the strainer, with sufficient of a mixture of one measure of alcohol, and three of water, to make the strained liquid equal to five gallons. The elixir is then finished in the usual manner by adding two gallons of syrup.

NOTE.—Both the methods here given have their advocates. By the method of detannating with albumen it is claimed that no effect is produced in the gallic acid, which nearly always accompanies tannin, and is equally prejudicial in elixirs that are intended to contain chalybeates. The only solution of this much vexed question is to try both plans, and take your choice.

ELIXIR OF CALISAYA OR CINCHONA, MADE FROM THE ALKALOIDS.

Sulphate of Quinine	8 grains.
Sulphate of Cinchonia . . .	32 ,,
Sulphate of Cinchonidia . . .	17 ,,
Citric Acid	10 ,,
Alcohol	2 ounces.
Boiling Water	2 ,,
Simple Elixir	12½ ,,

Dissolve the acid in two drachms of the water, to which add the alcohol; and to this solution add the quinine, cinchonidia and cinchonia, then add the remainder of the hot water; lastly, add the simple elixir; colour to suit. When this elixir is to be used with any of the iron preparations, omit the colouring.

Dose.—One to three teaspoonfuls

ELIXIR RHUBARB, COLUMBO AND IRON.

Rhubarb (in coarse powder) . .	640 grains.
Columbo ,, ,, . .	640 ,,
Pyrophosphate of Iron . . .	128 ,,
Warm Water	1 ounce
Sugar	6 ,,
Citric Acid	q. s.
Diluted Alcohol	15 ounces.
Prepared Flavouring	1 ,,

Percolate the powders with the percolating menstruum, until fourteen ounces are obtained; remove the tannin with q. s. albumen and citric acid, then add the sugar and prepared flavouring, and finally add the iron, previously dissolved in hot water, and filter.

Each fluid drachm contains 5 grains each of rhubarb and columbo, and 1 grain of the pyrophosphate of iron.

Properties.—Purgative, stomachic, astringent.

Uses.—Dyspepsia, chronic diarrhœa, and dysentery, febrile and inflammatory diseases. It is most useful in the remittent and intermittent fevers of hot climates.

Dose.—One teaspoonful.

ELIXIR OF BELLADONNA.

Tincture of Belladonna . . .	2¾ ounces.
Simple Elixir, to make . . .	1 pint.

Mix and filter. Each fluid drachm contains about ten drops of the tincture.

Properties.—Powerfully narcotic, diaphoretic, and diuretic.

Use.—In dropsy, neuralgia, headache, pertussis.

Dose.—One teaspoonful, repeated as needed.

ELIXIR OF BISMUTH.

Citrate of Bismuth and Ammonia .	256 grains.
Warm Distilled Water . . .	1 fl. ounce.
Aqua Ammonia, q. s. to neutralise.	
Simple Elixir	15 ,, ,,

Dissolve the bismuth in the warm water, adding the ammonia, drop by drop, until the solution is clear; add the elixir, and filter. Each fluid drachm contains 2 grains soluble citrate of bismuth.

Properties.—Antispasmodic, absorbent, tonic and sedative.

Use.—Dyspepsia, cardialgia, and painful affections of the bowels generally.

Dose.—Teaspoonful, often repeated.

ELIXIR OF BISMUTH, STRYCHNIA AND IRON.

Citrate of Iron and Ammonia .	256 grains.
Cit. of Bismuth and Ammonia .	128 ,,
Hall's Solution of Strychnia . .	2 ounces.
Simple Elixir, q. s. to make . .	1 pint.

Dissolve the iron and ammonia in a little warm water, and, after rubbing the bismuth in a mortar, add a little hot water to it. Add the two solutions to the elixir, and, lastly, the solution of strychnia, and filter.

Each fluid drachm contains 2 grains of iron, 1 of bismuth, and $\frac{1}{64}$ grain of strychnia.

Properties.—Antispasmodic, tonic, sedative, and astringent.

Uses.—Very useful in passive diarrhœa, pyrosis, affections of the bowels generally.

Dose.—One tablespoonful.

ELIXIR OF BLACKBERRY ROOT.

Blackberry Root (in coarse powder)	1280 grains.
Percolating Menstruum . . .	1 pint.
Sugar	5 ounces.
Prepared Flavouring . . .	1 ,,

Percolate the blackberry root with the percolating menstruum, consisting of diluted alcohol, until thirteen ounces are obtained, then add the prepared flavouring and the sugar; add sufficient of the menstruum to make one pint, and filter.

Each fluid drachm contains 10 grains of blackberry root.

Properties.—Astringent and tonic.

Uses.—In diarrhœa, from debility, cholera infantum, chronic dysentery, and in all cases where astringents are needed.

Dose.—One to three teaspoonfuls

ELIXIR OF CATHARTIC (COMPOUND).

Calisaya Bark (in moderately fine powder)	2 ounces.
Butternut (the inner bark of the root, dried and bruised) . .	2 ,,
Senna	2 ,,
Dried Peppermint	1 ,,
Fennel Seed (bruised) . . .	1 ,,
Black Cherry Bark (powdered) .	1 ,,
Poplar Bark	1 ,,
Alcohol	1 quart.
Distilled Water	1½ ,,
Simple Elixir	1½ pint.

Digest for fourteen days, and filter.

Uses.—A good laxative and cathartic.

Dose.—One tablespoonful once a day.

ELIXIR CHLORAL HYDRATE AND BROMIDE OF POTASSIUM.

Chloral Hydrate	640 grains.
Bromide of Potassium . . .	384 ,,
Simple Elixir	1 pint.

Dissolve the chloral hydrate and the bromide of potassium in the elixir, and filter. Each fluid drachm contains 5 grains of chloral and 3 grains of bromide of potassium.

Properties.—Hypnotic, anodyne, nervous sedative.

Uses.—In melancholia, insomnia, etc. It is greatly superior to opium, and to almost any other drug in its sleep-producing action.

Dose.—One or two teaspoonfuls.

ELIXIR OF CHESTNUT LEAVES.

Fluid Ext. Chestnut Leaves . .	4 ounces.
Simple Elixir	1 pint.

Mix and filter. Each fluid drachm contains about 15 drops of the extract.

Properties.—Tonic and astringent.

Use.—In intermittents and whooping cough.

Dose.—One to three teaspoonfuls.

ELIXIR PYROPHOSPHATE OF IRON AND QUININE.

Sulphate of Quinine . . .	128 grains.
Citric Acid	20 ,,
Pyrophosphate of Iron . . .	256 ,,
Aqua Ammonia, q. s.	
Simple Elixir, q. s. to make . .	1 pint.

Divide the elixir into two portions; in one dissolve the citric acid; in the other portion rub the quinine. Mix gradually and allow to stand a short time. Lastly, dissolve the pyrophosphate of iron in a little hot water and mix very slowly. In order to clarify, add a few drops gradually of aqua ammonia. Each fluid drachm contains one grain of quinine, and two grains of the pyrophosphate of iron.

Properties.—Tonic, astringent, febrifuge.

Uses.—Very useful in general debility, intermittent and remittent fevers.

Dose.—One teaspoonful.

ELIXIR OF BEEF.

Extract of Beef	1 ounce.
Warm Water	1 ,,
Simple Elixir	14 ,,

Dissolve the extract of beef in the water: add enough simple elixir to complete one pint, and filter.

Given as a stimulant during recovery from fevers, etc.

ELIXIR OF BEEF AND IRON.

Citrate of Iron and Ammonium .	64 grains.
Elixir of Beef	1 pint.

Dissolve the iron in water, and add the elixir; filter. Each tablespoonful contains 1 ounce of beef.

Elixirs of beef will be found valuable where inability to readily digest food exists, and where a stimulant is required. Each tablespoonful is said to contain the nutritive qualities of one ounce of beef.

ELIXIR OF WILD CHERRY AND IRON.

(*Ferriphosphated Elixir of Wild Cherry.*)

Pyrophosphate of Iron . . .	128 grains.
Elixir of Wild Cherry . . .	1 pint.
Hot Water, q. s.	

Dissolve the iron by adding to it two drachms and a half of hot water; when dissolved add the elixir.

A teaspoonful or dose contains 4 grains of wild cherry and 1 grain of pyrophosphate of iron.

ELIXIR OF PEPSINE, BISMUTH, IRON AND CALISAYA.

Fl. Ext. Calisaya	2 ounces.
Simple Elixir	12 ,,
Citrate of Bismuth and Ammonia .	256 grains.
Citrate of Iron and Ammonia . .	128 ,,
Saccharated Pepsin	256 ,,
Water	2 ounces.

Rub the pepsin with the water, and allow it to stand for two or three days; then dissolve the bismuth and ammonia in the water, with the help of a few grains of carbonate of ammonia. Rub the iron and ammonia with the elixir until dissolved. Mix the two solutions with the ferrated calisaya, and allow to remain a few days undisturbed, and filter if necessary.

Dose.—One teaspoonful.

MEDICATED SYRUPS.

SYRUP OF ASSAFŒTIDA.

Pulv. of Assafœtida	1 ounce.
Carb. of Magnesia	6 drachms.
Flavouring	1 ounce.
Hot Water	1 pint.
Sugar, aver. wt.	2 pounds.

Rub the assafœtida and magnesia together in a mortar, and add the hot water, rubbing thoroughly; allow this to stand for an hour, and then filter; after filtering add the flavouring, and agitate the sugar in the liquid until it is entirely dissolved.

Each teaspoonful contains 3 grains of assafœtida.

Uses.—Can be employed with excellent result in cases of hysteria and chorea of young girls, and in the colic of children.

Dose.—One to three teaspoonfuls—children in proportion.

SYRUP OF RHUBARB AND POTASSA COMPOUND.

(*Neutralising Cordial.*)

Rhubarb (coarse powder)	2 ounces.
Carbonate of Potassa	2 ,,
Golden Seal (coarse powder)	1 ,,
Cinnamon ,, ,,	1 ,,
Sugar	4 pounds.
Brandy	1 gallon.
Oil of Peppermint	20 minims.

Macerate the rhubarb, golden seal, and cinnamon in half a gallon of the brandy for six hours at a gentle heat, keeping covered; then transfer to percolator and displace first with the remaining brandy, and afterwards with enough water to complete one gallon. Add the potassa, sugar, and oil of peppermint previously rubbed with sufficient sugar; strain.

Dose.—For an adult, a tablespoonful: children in proportion to age.

Uses.—This is a preparation in much favour as a remedy in cases of indigestion, sour stomach, habitual constipation, and in some forms of diarrhœa of children.

SYRUP OF SENNA COMPOUND.

Alexandria Senna	4 troy ounces.
Jalap	$1\frac{1}{2}$,, ,,
Rhubarb	4 drachms.
Cinnamon	1 ,,
Cloves	1 ,,
Nutmegs	30 grains.
Oil of Lemon	20 minims.
Sugar	24 troy ounces.

The first six articles are to be reduced to a coarse powder and exhausted with dilute alcohol. Evaporate the liquor by water-bath to eighteen fluid ounces, and filter. Lastly, add the sugar and oils.

Uses.—A pleasant and efficient laxative and cathartic, useful in cases of habitual constipation.

Dose.—From one to four fluid drachms.

SYRUP OF QUININE, MORPHIA AND STRYCHNIA.

Syrup of Quinine and Morphia	1 pint.
Hall's Solution of Strychnia	2 ounces.

Mix. Each fluid drachm contains $1\frac{1}{8}$ grain of quinine, $\frac{1}{8}$ grain of morphia, and $\frac{1}{64}$ grain of strychnia.

Uses.—A good nerve tonic.

Dose.—One teaspoonful.

SYRUP OF STRYCHNIA.

Hall's Solution of Strychnia	2 ounces.
Prepared Flavouring	1 ,,
Simple Syrup	13 ,,

Mix and add the solution with the syrup. Lastly, the flavouring. Each fluid drachm contains $\frac{1}{64}$ grain of strychnia.

Uses.—To be given under the advice of a physician.

Dose.—One to two teaspoonfuls.

SYRUP OF STRYCHNIA AND MORPHIA.

Hall's Solution of Strychnia	2 ounces.
Majendie's Solution of Morphia	1 ,,
Prepared Flavouring	1 ,,
Simple Syrup	13 ,,

Mix. Add the two solutions with the syrup. Lastly, add prepared flavouring. Each fluid drachm contains $\frac{1}{64}$ grain of strychnia and $\frac{1}{8}$ grain of morphia.

Uses.—See preceding formula.

Dose.—One teaspoonful.

SYRUP HYPOPHOSPHITES COMPOUND.

Hypophosphite of Lime	256 grains.
Hypophosphite of Potassa	128 ..
Hypophosphite of Soda	192 ..
Hypophosphite of Iron	96 ..
Sol. Hypophosph. Acid, q. s. or	240 ..
White Sugar	12 ounces.
Extract Vanilla	1 drachm.
Water, a sufficient quantity.	

Dissolve the lime, soda, and potassa in six ounces of water; put the iron in a mortar and gradually add the hypophosphorous acid until it is dissolved; to this add the other solution (after it has been rendered slightly acidulous with the same acid), and then water until the whole measures 9 fluid ounces. Dissolve the sugar in this, with heat, and flavour with the vanilla.

Remarks.—Any other flavouring may be used, such as ginger, orange peel, or orange flower. It is also suggested that glycerine may be used partially or wholly; instead of sugar, using $6\frac{1}{2}$ ounces of glycerine to 12 of sugar.

Uses.—A convenient method of administering the combined hypophosphites, and useful in scrofula, hysteria, and other diseases arising from an impoverished condition of the blood.

Dose.—One or two teaspoonfuls.

SYRUP SARSAPARILLA COMPOUND.

Sarsaparilla (coarse)	24 troy ounces.
Guaiacum Wood (coarse)	3 ,, ,,
Pale Rose Senna Licorice (coarse) } of each	2 ,, ,,
Oil Sassafras Oil Anise } of each	5 drops.
Oil Gaultheria	3 ,,
Sugar (coarse)	96 troy ounces.
Dilute Alcohol, q. s.	

Mix the solid ingredients, except the sugar, with 3 pints of dilute alcohol, and allow this to stand for twenty-four hours, transfer to percolator and pour on dilute alcohol until 10 pints of tincture have passed. Evaporate this with water-bath to 4 pints; filter. Add sugar and dissolve by gentle heat, and strain while hot. Lastly, rub oils with a small portion of mixture, and mix them thoroughly with the remainder.

Uses.—Sarsaparilla, when given alone, is of little value as a medicine, popular belief to the contrary notwithstanding. It is, however, a convenient vehicle for the administration of iodide of potassium, and is much used in the treatment of scrofula, syphilis, and other blood diseases.

Dose.—A tablespoonful.

SYRUP HYPOPHOSPHITES OF MANGANESE.

Sulphate of Manganese	240 grains.
Hypophosphite of Calcium	160 „
Water, sufficient.	
Orange Flower Water	1 ounce.
Sugar	2 pounds.

Dissolve the manganese and calcium separately in sufficient water. Mix. Then wash the precipitate, evaporate the filtrate to 1 pint, dissolve in this the sugar, by the aid of a gentle heat, and add orange flower water. Each drachm contains $2\frac{1}{3}$ grains hypophosphite of manganese.

Uses.—May be given in scrofula, obstinate ulcers, and syphilis.

Dose.—One teaspoonful.

SYRUP IODIDE OF IRON AND QUININE.

Iodine	75 grains.
Iron Filings	30 „
Water	5 drachms.
Simple Syrup	36 ozs., avoir.
Sulphate of Quinine	15 grains.
Aromatic Sulph. Acid, sufficient.	

Digest the iron filings with the iodine and water at a gentle heat, until the solution is colourless; filter it into the simple syrup; mix well, and add it to the quinine solution.

Uses.—May be used with success in scrofula and kindred diseases.

Dose.—One-half to one teaspoonful.

SYRUP IODIDE OF IRON.

Iodine (dry)	960 grains.
Warm Distilled Water	3 ounces.
Iron Filings, sufficient, or	300 grains.
Syrup, sufficient.	

Dissolve the dry iodine in the warm water, in a mattrass, add the filings to the mixture, and shake until it has acquired a green colour and has lost all its smell of iodine. Filter the solution and mix the simple syrup. The finished product is to measure 20 fluid ounces.

Uses.—Same as preceding formula.

Dose.—Ten drops to one teaspoonful.

SYRUP LACTOPHOSPHATE OF LIME.

Bibasic Phosphate of Lime	450 grains.
Concentrated Lactic Acid, q. s., or about	500 „
Distilled Water	$25\frac{1}{2}$ ounces.
White Sugar	47 „
Essence of Lemon	6 drachms.

Carefully divide the phosphate in the distilled water, add the acid in quantity just sufficient to dissolve the salt, and then add the sugar. This being dissolved without heat, or a very gentle one, strain the syrup, and, when cold, add the essence of lemon.

Each fluid drachm contains nearly 3 grains of bibasic phosphate of lime.

Uses.—May be given in some cases of dyspepsia, or in scrofula and caries.

Dose.—One or two teaspoonfuls.

SYRUP LACTOPHOSPHATE OF LIME AND PEPSIN.

Syrup Lactophosphate of Lime	1 pint.
Powdered Pepsin	256 grains.

Dissolve the pepsin in a portion of the syrup, add to remaining syrup, and after two days filter.

Each fluid drachm contains about 3 grains of lime and 2 grains of pepsin.

Uses.—Same as preceding.

Dose.—One or two teaspoonfuls.

SYRUP LACTOPHOSPHATE OF LIME, No. 2.

Concentrated Lactic Acid	1 troy ounce.
Magma of Phosphate Lime, sufficient.	
Orange Flower Water	$1\frac{1}{2}$ fl. ounces.
Water, enough to complete	8 „ „
Sugar	11 ounces.

Dissolve in the lactic acid as much of the phosphate as it will take up; add the water, filter and dissolve the sugar in the filtrate without heat.

Dose.—One to three teaspoonfuls.

SYRUP OF CHLOROFORM.

Chloroform	20 drops.
Alcohol	90 minims.
Simple Syrup	3 ounces.

Mix the chloroform and the alcohol, and to the solution add the simple syrup. A good addition to bitter mixtures and drops.

Dose.—One or two teaspoonfuls could be given.

SYRUP PHOSPHATE OF IRON, QUINIA AND STRYCHNIA.

Sulphate of Iron	5 drachms.
Phosphate of Soda	1 ounce.
Sulphate of Quinine	192 grains.
Strychnia	4 „
Diluted Phos. Acid	14 ounces.
White Sugar	14 „
Ammonia, sufficient.	
Sulphuric Acid, sufficient.	

Dissolve the sulphate of iron in one ounce of boiling water, and the soda in two ounces; mix the solutions and wash the precipitated phosphate of iron until the washings are tasteless. With sufficient aromatic sulphuric acid dissolve the quinine in two ounces of water, and precipitate the quinine with the slightest possible excess of ammonia. Wash carefully the precipitated alkaloid. Dissolve in the phosphoric acid the iron, the quinine and the strychnia; then add the sugar, and, lastly, dissolve it without heat. Care should be taken that nothing but the absolute, pure, tribasic phosphoric acid is used, that which is obtained from phosphorus.

Each fluid drachm contains 1 grain of quinine, and $\frac{1}{32}$ of a grain of strychnia.

Uses.—An excellent nerve tonic.

Dose.—One teaspoonful, three or four times daily.

SYRUP OF MANNA.

Flake Manna	10 ounces.
Hot Water	12 ,,

Make a solution, strain, and add

Sugar	1 pound.

Dissolve by a gentle heat.

Uses.—This is an elegant laxative.

Dose.—A tablespoonful, or more.

SYRUP OF PINUS (COMPOUND).

White Gum Turpentine	2 drachms.
Sulphate of Morphia	8 grains.
Fluid Ext. Ipecac	½ ounce.
Chloroform	1 drachm.
Sugar	14 ounces.
Water	6 ,,
Alcohol	3 ,,
Carbonate of Magnesia, q. s.	

Dissolve the gum turpentine in the alcohol, add the ipecac and morphia; rub well with the magnesia, add the sugar and water; filter; and, lastly, add the chloroform.

This is a valuable addition to cough syrups.

Dose.—One teaspoonful.

SYRUP OF LEMON.

Lemon Juice (fresh strained)	1 pint.
Sugar (in coarse powder)	48 ounces.
Water	1 pint.

Mix the lemon juice and water together, add the sugar, dissolve it by a gentle heat, strain while hot.

SYRUP OF SARSAPARILLA WITH IODIDE OF CALCIUM.

Com. Fld. Ext. of Sarsaparilla	4 ounces.
Iodide of Calcium	2 drachms.
Boiling Water	3 ounces.
Syrup	14 ,,
Extract of Vanilla, q. s.	

Rub the calcium with the boiling water, until the solution becomes white. Filter the solution from the precipitate, and add the extract and syrup; mix, and flavour with the vanilla. Each fluid drachm contains nearly 1 grain of calcium, and about 4¼ drops of sarsaparilla.

Uses.—Given in erysipelas, scrofula, etc.

Dose.—One to three teaspoonfuls.

SYRUP OF BLACK SNAKE ROOT (COMPOUND).

Black Snake Root	1½ ounce.
Wild Cherry	2½ ,,
Ipecac Root	½ ,,
Extract of Licorice (powdered)	½ ,,
Simple Syrup	16 ,,

Bruise the snake root and ipecac fine, and saturate with eight ounces of alcohol for twenty-four hours; transfer to a percolator and run through two pints of diluted alcohol. Evaporate to one pint by water-bath, then add the syrup and licorice. Lastly, take the wild cherry, moderately fine, put in a percolator and run eight ounces of cold water through. Mix together and shake well.

Uses.—This is a good method of administering the black cohosh. It is given in chronic bronchitis, chorea, lumbago, atonic amenorrhœa, etc.

Dose.—One-half to one tablespoonful.

SYRUP WILD GINGER.

Wild Ginger Root (bruised)	1½ ounce.
Carbonate of Pottassium	30 grains.
Cochineal (bruised)	20 ,,
Wine of Ipecac	6 drachms.
Alcohol, 80 per cent.	10 ounces.
Water	10 ,,
White Sugar	24 ,,

Macerate for fourteen days, all except the sugar, express and filter through paper, adding dilute alcohol to complete twenty ounces, then add the sugar to the solutions and dissolve without the aid of heat.

Uses.—Stimulant and diaphoretic. Given in low forms of febrile disease, and in colic. Valuable as an emmenagogue.

Dose.—One teaspoonful.

SYRUP SULPHATE OF QUININE.

Sulphate of Quinine	64 grains.
Aro. Sulph. Acid, q. s.	
Simple Syrup	1 pint.

Dissolve the quinine in as small a portion of the aro. sulph. acid as possible; add the syrup and filter.

Each teaspoonful contains ½ grain of quinine.

Uses.—A convenient and pleasant method of administering quinine to children.

Dose.—From one-half to two teaspoonfuls, according to age.

SYRUP COD LIVER OIL.

Cod Liver Oil	8 ounces.
Gum Acacia (pulverised)	5 ,,
Water	12 ,,
Simple Syrup	4 ,,
White Sugar	24 ,,

Make an emulsion of the first four ingredients, and dissolve the sugar at a moderate heat, then add orange flower water, two ounces.

Usee.—A good method of giving cod liver oil, as it serves to partially mask the disagreeable taste.

Dose.—Two teaspoonfuls.

SYRUP MORPHIA (COMPOUND).

Fluid Extract of Ipecac.	½ drachm.
Syrup of Senega	3 ,,
Syrup of Rhubarb	4 ,,
Simple Syrup	31 ounces.
Muriate Morphia	8 grains.
Ess. of Sassafras, q. s. to flavour.	

Mix. This is known as Jackson's Cough Syrup.

Dose.—One or two teaspoonfuls, as required.

SYRUP ACETATE MORPHIA.

Acetate Morphia	4 grains.
Clarified Syrup	1 pound.

Mix the morphia with a little quantity of water, and when dissolved add to syrup.

Dose.—For adults, from 1 to 4 drachms.

SYRUP SULPHATE OF MORPHIA.

Sulphate of Morphia	4 grains.
Clarified Syrup	1 pound.

Mix the morphia with a small quantity of water, and when dissolved add the syrup.

Dose.—For adults, from 1 to 4 drachms.

SYRUP IPECAC.

Ipecac (in coarse powder)	4 ounces.
Rectified Spirits	2 pints.
Proof Spirits, Water, of each	14 ounces.
Syrup	7 pints.

Digest the ipecac in the rectified spirits for twenty-four hours, squeeze and filter; repeat this process with the proof spirits, and again with the water. Unite the fluids, and distil to 12 ounces; add 5 ounces of rectified spirits, and then the syrup.

Used in bronchitis, asthma, and croup.

Dose.—From 1 to 2 teaspoonfuls.

SYRUP IPECAC, U. S. P.

Fluid Extract of Ipecac	2 fl. ounces.
Syrup	30 fl. ,,

Mix them.

Dose.—As an emetic for children, from 10 drops to 1 teaspoonful.

SYRUP HYPOPHOSPHITES COMPOUND OF LIME, SODA, POTASSA AND IRON.

Hypophosphite of Lime	256 grains.
Hypophosphite of Soda	172 ,,
Hypophosphite of Potassa	128 ,,
Proto. Sulphate of Iron	185 ,,
Hypophosphorous Acid	9 fl. drs.
Sugar	12 troy ozs.
Water	sufficient.

Dissolve 96 grains of the lime in 4 ounces of water, with the aid of heat, and acidulate the solution with a small portion of the acid. Dissolve the iron in 2 ounces of water and mix the two solutions; let stand for a short time, and pour into a paper filter with a small quantity of water; acidulate as before, and preserve the filtrate. Dissolve the remaining lime, with the other hypophosphites, in 4 fluid ounces of water, with the aid of heat, adding the remaining acid. Mix the solutions and preserve the filtrate, adding sufficient water to complete 10 ounces, and pour the liquid into a bottle containing the sugar. Agitate the mixture occasionally, until the solution is complete; filter if necessary.

This is the formula adopted by the Pharmaceutical Association.

Each teaspoonful contains $3\frac{4}{5}$ grains of lime, $2\frac{3}{20}$ grains of soda, $1\frac{3}{5}$ grain of potassa.

Uses.—A remedy highly valued by physicians in the treatment of dyspepsia, pulmonary phthisis, sexual debility, and all those diseases where there are wasted tissues and a lack of vital force.

Dose.—One teaspoonful, 2 or 3 times daily.

SYRUP HYPOPHOSPHITES COMPOUND OF IRON, QUININE AND STRYCHNIA.

Ferrous Oxide	320 grains.
Quinine (pure)	64 ,,
Strychnia	1 ,,
Hypophosphorous Acid	10 drachms.
White Sugar	2 ounces.
Orange Flower Water, sufficient for	8 ,,

Dissolve the ferrous oxide, the quinine, and the strychnia in the hypophosphorous acid, add the sugar and sufficient orange flower water to complete the measure of 8 ounces.

Each teaspoonful contains 5 grains of oxide of iron, 1 grain of quinine, and $\frac{1}{64}$ grain of strychnia.

Uses.—An excellent tonic.

Dose.—One teaspoonful, three times daily for an adult.

SYRUP HORSE-RADISH.

Grated Horse-radish	$1\frac{1}{2}$ ounce.
Best White Sugar	16 ,,
Boiling Water	8 ,,

Digest the horse-radish in a covered vessel with the boiling water; strain and add the sugar.

Uses.—May be given in cases of feeble appetite, flatulence, and gastric debility.

Dose.—One or two teaspoonfuls.

COX'S HIVE SYRUP.

(SYRUP SQUILLS COMP.)

Squills (in moderately coarse powder)	4 ounces.
Seneka, ,, fine ,,	4 ,,
Tartrate of Antimony and Potassium	48 grains.
Sugar (coarse)	42 ounces.
Dilute Alcohol Water	each a sufficient quantity.

Mix the squills and seneka, and having moistened the mixture with half a pint of dilute alcohol allow it to stand for a day; transfer to percolator, and pour the dilute alcohol on until three pints of the tincture have passed. Boil for a few minutes; evaporate by water-bath to half a pint, add fourteen ounces boiling water; filter. Dissolve the sugar in the filtered liquid; having heated the solution to a boiling point, strain while hot; then dissolve the antimony and potassium in the solution while hot, and add boiling water sufficient, through the strainer, to measure three pints. Mix the whole thoroughly together.

Uses.—An old and favourite remedy; valuable in the croup of children, etc.

Dose.—From ten drops to one drachm.

SYRUP ORANGE PEEL.

Fresh Orange Peel	$2\frac{1}{2}$ ounces.
Distilled Water	1 pint.
White Sugar	3 pounds.

Macerate the peel in the water for twelve hours in a covered vessel; then to the decanted fluid add the sugar.

Uses.—Chiefly as a vehicle to mask the taste of nauseous medicines.

Dose.—One to two teaspoonfuls.

SYRUP OF DOVER'S POWDER.

Macerate, for a few days, 64 grains of pulverised opium in 1 ounce of wine of ipecac; filter, and add to 16 ounces of simple syrup; drive off excess of alcohol by slightly heating; after, if you wish, add 1 ounce Sulp. Potass.; dissolve in syrup and filter.

Each teaspoonful is equivalent to 5 grains Dover's Powder.

SYRUP QUININE AND MORPHIA.

Sulphate of Morphia	1 grain.
Sulphate of Quinine	128 „
Aromatic Sulph. Acid, q. s. or	1 drachm.
Flavouring	1 ounce.
Water	17 „
Sugar	16 „

Dissolve the quinine with the arom. sulph. acid, and add flavouring with the water, holding the morphia in solution; mix and percolate the sugar with the mixture until dissolved. Each fluid drachm contains 1 grain of quinine, and ⅛ grain of morphia.

Uses.—May be given when the patient is unable to bear large doses of quinine.

Dose.—The adult may take 1 teaspoonful.

SYRUP OF RHUBARB, AROMATIC.

Fluid Extract Rhubarb, Arom.	2 ounces.
Simple Syrup	14 „

Mix them.

Uses.—Valuable in bowel complaints of children.

Dose.—Teaspoonful, to tablespoonful, according to age.

SYRUP OF SQUILLS.

Vinegar of Squills	1 pint.
Sugar (in coarse powder	24 ounces.

Dissolve the sugar in vinegar of squills, with the aid of a gentle heat, and strain while hot.

Uses.—Given largely in coughs and whenever a diuretic and expectorant is required.

Dose.—One-half to one teaspoonful.

AROMATIC SYRUP OF RHUBARB.

The following will be found a ready method of making an aromatic syrup of rhubarb:—

Rhubarb (in moderately fine powder)	6 ounces.
Cloves „ „ „	2½ „
Cinnamon (in fine powder)	2¼ „
Nutmeg „ „ „	¾ „

Percolate with a menstruum of

Stronger Alcohol	6 ounces.
Water	5 „
Glycerine	5 „

until one pint has passed through.

One fluid ounce of this extract mixed with fifteen fluid ounces of syrup will make a pint of aromatic syrup of rhubarb.

SYRUP OF TAR.

Pure Pine Tar	1 ounce.
Pine Sawdust	1 „
Pure Rainwater	4 „

Mix the tar with the sawdust and pour on it the water, heated to 140° Fahr.; shake occasionally, and after a few hours' contact, filter or strain 4 ounces, and add syrup to make one pint. Flavour to suit.

Uses.—Highly prized by many in cases of chronic cough and soreness of the lungs.

Dose.—One or two tablespoonfuls.

SYRUP OF TOLU.

Tincture of Tolu	2 ounces.
Carbonate of Magnesia	2 drachms.
Sugar (in coarse powder)	26 ounces.
Water	1 pint.

Rub the tincture of tolu first with the magnesia and two ounces of sugar, then with the water gradually added, and filter. To the filtered liquid add the remainder of the sugar; dissolve with gentle heat, and strain while hot.

Uses.—As an expectorant, generally in combination, on account of its pleasant flavour.

Dose.—One or two teaspoonfuls.

MEDICATED WINES.

WINE OF ANTIMONY.

Tartar Emetic	32 grains.
Boiling Water	1 ounce.
Sherry Wine	1 pint.

Dissolve the salt in the boiling water, and while hot add the wine.

Properties.—Febrifuge and expectorant.

Uses.—In large doses, emetic.

Dose.—From ½ drachm to ½ ounce.

WINE OF ALOES.

Socotrine Aloes (fine powder)	1 troy ounce.
Cardamom (in fine powder)	60 grains.
Ginger „ „	60 „
Sherry Wine	1 pint.

Macerate for seven days, and occasionally shaking; filter through paper.

Uses.—Useful in cases of habitual constipation.

Dose.—From 2 drachms to 2 ounces.

WINE OF CALISAYA.

Fluid Ext. Calisaya	1½ ounce.
Simple Elixir	4 „
Sherry Wine, to make	1 pint.

Mix.

WINE OF CINCHONA.

Sulphate of Cinchonidia	10 grains.
Sulphate of Quinine	5 „
Sherry Wine	12 ounces.
Simple Elixir, to make	1 pint.

Dissolve sulphates in wine; add elixir, and filter.

Each fluid drachm represents 5 grains of calisaya bark. This, as well as the preceding, will be found an excellent tonic.

Dose.—A tablespoonful.

WINE OF ERGOT.

Ergot (in moderate fine powder)	4 troy ounces.
Sherry Wine, sufficient to make	2 pints.

Moisten the powder with a portion of the wine, pack in percolator and percolate until two pints have passed.

Uses.—Valuable in nervous headache and cerebro-spinal meningitis, but used chiefly in uterine hemorrhage and in labour.

Dose.—One drachm.

WINE OF IPECAC.

Ipecac (in fine powder)	2 troy ounces.
Sherry Wine, sufficient to make	2 pints.

Moisten with a portion of the wine, pack in percolator, and add the wine until two pints have passed.

Properties.—Expectorant, diaphoretic, emetic.

Uses.—Useful in dyspepsia, fevers and chronic diarrhœa.

Dose.—From one drachm to half an ounce.

WINE OF RHUBARB.

Rhubarb (in coarse powder)	2 troy ounces.
Canella (in fine powder)	60 grains.
Sherry Wine	14 fl. ounces.
Dilute Alcohol, sufficient quantity.	

Mix two ounces of alcohol with the wine, and moisten the powders. Transfer to percolator, and pour on the remaining liquid and enough dilute alcohol to measure one pint.

Uses.—A carminative and laxative. It may be used to advantage by persons of constipated habit.

Dose.—One to four teaspoonfuls.

WINE OF COLCHICUM ROOT.

Colchicum Root (in fine powder)	12 troy ounces.
Sherry Wine, sufficient to make	2 pints.

Moisten the powder with a portion of the wine, pack in percolator, and gradually pour on the alcohol until two pints are obtained.

Uses.—A valuable remedy in gout, rheumatism and neuralgia. Poisonous in overdoses.

Dose.—From ten drops to one drachm.

AROMATIC WINE.

Wormwood Peppermint Thyme Hyssop Sage Lavender Sweet Marjoram	2 drachms each.
Port Wine	2 pints.

Macerate for several days, transfer to percolator and displace.

Uses.—As a mild tonic, and in debility of the stomach.

Dose.—One-half wine-glass, as needed.

BEEF, WINE AND IRON.

Extract of Beef	1 ounce.
Citrate of Iron and Ammonia	4 drachms.
Orange Flower Water	3 ounces.
Sherry Wine	1 pint.

Mix the beef with the wine, dissolve the iron and ammonia in a portion of boiling water; when dissolved add to the wine with the orange flower water, and filter.

Uses.—Valuable as a stimulant during convalescence from febrile and other wasting diseases.

Dose.—One to two teaspoonfuls.

WINE OF QUININE.

Sulphate of Quinine	128 grains.
Simple Elixir	6 ounces.
Sherry Wine, q. s. to make one pint.	

Dissolve the quinine by the aid of as small a quantity of elixir of vitriol as is possible; add other ingredients and filter.

Uses.—Valuable in most cases where the use of quinine is indicated.

Dose.—A teaspoonful.

WINE OF OPIUM.

Pulverised Opium	2 ounces.
Pulverised Cinnamon	60 grains.
Cloves (bruised)	60 „
Sherry Wine	1 pint.

Rub the first three ingredients together, put in a percolator and percolate with sherry wine. Filter.

Uses.—This is a valuable preparation whenever the use of opium is required, as it is less apt to disagree with the stomach than most preparations of that drug.

Dose.—Ten to twenty-five drops.

WINE OF WILD CHERRY AND IRON.

Wine of Wild Cherry	1 pint.
Citrate of Iron and Ammonia	4 drachms.
Cinnamon Water	3 ounces.

Dissolve the iron in a portion of hot water, and add the other ingredients.

Uses.—Tonic and stimulant.

Dose.—A teaspoonful.

WINE OF PEPSIN AND BISMUTH.

Citrate of Bismuth and Ammonia .	128 grains.
Wine of Pepsin	1 pint.

Dissolve the bismuth by rubbing down in a mortar and then adding four drachms of hot water; add to the wine and filter if necessary. Each fluid drachm contains 2 grains of pepsin and 1 of citrate of bismuth.

Uses.—A valuable remedy during enfeebled digestion, and in some forms of dyspepsia and bowel complaint.

Dose.—One or two teaspoonfuls.

WINE OF PEPSIN, BISMUTH AND STRYCHNIA.

Sulphate of Strychnia . . .	1 grain.
Wine of Pepsin and Bismuth . .	1 pint.

Dissolve the strychnia by rubbing with a portion of the wine, until thoroughly dissolved, then add the remaining wine and filter. Each fluid drachm contains 2 grains of pepsin, 1 of bismuth and $\frac{1}{128}$ grain of strychnia

Uses.—Used in the same class of disorders as the preceding remedy.

Dose.—One to two teaspoonfuls.

WINE OF PEPSIN AND IRON.

Pyrophosphate of Iron . . .	128 grains.
Wine of Pepsin	1 pint.

Dissolve the iron in about four drachms of hot water, by thoroughly rubbing together; add the wine and filter. Each fluid drachm contains 2 grains of pepsin and 1 of iron.

Dose.—One to three teaspoonfuls.

WINE OF PANCREATIN.

Powdered Pancreatin . . .	160 grains.
Prepared Flavouring . . .	½ ounce.
Sherry Wine, sufficient for . .	1 pint.

Macerate the pancreatin in the mixed liquids for twenty-four hours, and filter. Each tablespoonful contains 5 grains of pancreatin.

Uses.—Valuable in cases of jaundice, dyspepsia and gastric irritation.

Dose.—One or two teaspoonfuls.

WINE OF TAR.

Ground Malt Honey Tar	each 1 pound.
Yeast	½ pint.
Water, sufficient.	

Mix the first three ingredients and three quarts of water in a stone vessel, keep warm for three hours; then let this cool and add the yeast. After fermentation sets in keep it moderately warm for a week, then strain through Canton flannel, and remove the dregs from the liquor. The expressed liquor is then filtered for use.

Uses.—Valuable in chronic bronchitis and pulmonary complaints generally.

Dose.—A tablespoonful.

WINE OF WILD CHERRY (Ferrated.)

Fluid Ext. Wild Cherry Bark . .	1 ounce
Syrup ,, ,, ,, . .	2 ,,
Solution Oil Bitter Almonds . .	10 drops.
Wine of Orange	13 ounces.
Pyrophosphate of Iron . . .	128 grains.

Dissolve the iron in a small quantity of hot water; add other ingredients, macerate for several days and filter.

Uses.—A good tonic; useful in loss of appetite, and enfeebled condition of the system.

Dose.—A teaspoonful.

WINE OF PEPSIN.

Saccharated Pepsin . . .	2 drachms.
Distilled Water	1 fl. ounce.
Sugar	10 drachms.
Alcohol	4 ,,
Best Sherry Wine	8 ounces.

Dissolve the pepsin in the water, by the aid of a few drops of muriatic acid; add sugar, then the wine, and lastly the alcohol; filter, if necessary.

Uses.—Can be given in dyspepsia, indigestion, etc.

Dose.—One to three teaspoonfuls.

WINE OF IRON (AROMATIC).

Iron Filings	1 ounce.
Lemon Juice	3 fl. ,,
Contused Gentian	½ ,,
Contused Cinnamon . . .	½ ,,
Rhenish Wine	18 ,,

Digest for twenty-four hours and decant.

Uses.—A valuable tonic in case of impoverished blood, and in many forms of various diseases.

Dose.—From one-half to two drachms.

BITTER WINE OF IRON.

Sulphate of Cinchonia . . .	45 grains.
Sulphate of Quinine . . .	15 ,,
Citric Acid	60 ,,
Citrate of Iron (soluble) . . .	240 ,,
Tinct. of Orange Peel (fresh) . .	3 fl. ounces.
Distilled Water	3 ,, ,,
Sherry Wine	8 ,, ,,
Syrup	2 ,, ,,

Dissolve the sulphates, with the citric acid, in two ounces of water, and the iron in the remaining water. Mix the two solutions and add the other ingredients, previously well mixed, together.

Uses.—Excellent as a tonic during recovery from fevers, and in cases where there is loss of strength and appetite.

Dose.—A teaspoonful.

MEDICATED WATERS.

BITTER ALMOND WATER.

Oil of Bitter Almonds	16 minims.
Carbonate of Magnesia	60 grains.
Distilled Water	2 pints.

First rub the oil with the carbonate of magnesia, and gradually add the water. Filter through paper.

CINNAMON WATER.

Oil of Cinnamon	½ fl. drachm.
Carbonate of Magnesia	60 grains.
Distilled Water	2 pints.

Rub the carbonate of magnesia thoroughly with the oil of cinnamon, and gradually add the water.

CAMPHOR WATER.

Gum Camphor	2 drachms.
Alcohol	1 ,,
Carb. of Magnesia	1 ,,
Distilled Water	2 pints.

First rub the camphor with the alcohol, then with the magnesia, and lastly add the water gradually and filter through paper.

LIME WATER.

Lime	4 ounces.
Water	1 gallon.

First slack the lime with a small portion of the water, then add the remainder, and stir them together and cover the vessel immediately; in about three hours it is ready for use. Always keep in a well-stoppered bottle.

CREOSOTE WATER.

Creosote	1 fl. drachm.
Distilled Water	1 pint.

Mix them, and agitate them until the creosote is dissolved.

FENNEL WATER.

Oil of Fennel	½ fl. drachm.
Carbonate of Magnesia	60 grains.
Distilled Water	2 pints.

Rub the oil with the magnesia, then gradually add the water, and filter.

PEPPERMINT WATER.

Oil of Peppermint	½ fl. drachm.
Carbonate of Magnesia	60 grains.
Distilled Water	2 pints.

Rub the oil with the magnesia, and then add the water gradually, and filter through paper.

ROSE WATER.

Oil of Rose	15 drops.
Carbonate of Magnesia	1 drachm.
Distilled Water	1 pint.

Rub the oil first with the magnesia, then with the water gradually added, and filter.

MINERAL WATERS.

CONGRESS WATER.

Calcined Magnesia	1 ounce.
Bicarb. of Soda	20 grains.
Hydrate of Soda	23 ,,
Common Salt	7¾ ounces.

Add to ten gallons of water, and charge with carbonic acid gas.

SELTZER WATER.

Bicarbonate of Soda	5½ ounces.
Carb. of Magnesia	7 drachms.
Marble Dust	½ ounce.
Muriatic Acid, c. p.	5¾ ,,
Water	10 gallons.

Add the acid to ½ gallon of water; dissolve the marble in the mixture; then add the magnesia, and after one hour the bicarbonate of soda; add the whole to the rest of the water, and charge with gas.

KISSENGEN WATER.

Bicarbonate of Soda	1 drachm.	
Carbonate of Lime	2 ,,	+ 2 scruples.
Precipitate of Carb. Iron	2 ,,	+ 2 ,,
Phosphate of Lime	2 ,,	+ 2 ,,
Phosphate of Soda	13 grains.	
Sulphate of Magnesia	2 ounces.	
Sulphate of Soda	2 drachms	+ 2 scruples.
Muriate of Ammonia	4 grains.	
Common Salt	8 ounces.	

Mix. Add ½ gallon of water; let it stand twelve hours; filter; add carbonate of magnesia 3 drachms and 1 scruple, and charge with 10 gallons of water.

VICHY WATER.

Carbonate of Ammonia	10 grains.
Bicarbonate of Soda	5¼ ounces.
Common Salt	6 drachms.
Phosphate of Soda	25 grains.
Sulphate of Soda	4 scruples.
Sulphate of Potassa	2 drachms.

Mix, and add water ½ gallon; let it stand half a day; filter and charge with 10 gallons of water.

HUNYADI JANOS WATER.

Sulphate of Lime	1½ ounce.
Glauber Salts	23 ,,
Epsom Salts	28 ,,
Sulphate of Potassium . . .	1 drachm.
Water	10 gallons.

Mix, and charge with gas.

CITRATE OF MAGNESIUM WATER.

Citric Acid	16 ounces.
Carbonate of Magnesium . .	16 ,,
Essence of Lemon	8 ,,

Dissolve the acid in 4 pints of hot water; add the magnesia. When effervescence ceases add the lemon, and make up sufficient to measure 1 gallon.

Charge with 9 gallons of water.

LINIMENTS.

ACONITE AND CHLOROFORM LINIMENT.

Tincture of Aconite Root . .	2 ounces.
Chloroform	2 ,,
Soap Liniment	12 ,,

Mix them; apply carefully.

Valuable in neuralgia and in sprains. Should not be used when the skin is broken.

ARNICA LINIMENT

Arnica Flowers	2 ounces.
Oil of Sassafras	½ ,,
Oil of Turpentine	½ ,,
Oil of Origanum	½ ,,
Alcohol, sufficient to make . .	1 pint.

Bruise the flowers and macerate with 8 ounces of alcohol for three days, then transfer to percolator; add remaining alcohol, and percolate until 15 ounces have passed; then add the oils, and shake well.

For external use. Good in sprains, bruises and lame back.

SOAP LINIMENT.

Castile Soap (in shavings) .	4 troy ounces.
Camphor	2 ,, ,,
Oil of Rosemary	½ fl. drachm.
Water	4 ,, ounces.
Alcohol	2 pints.

Mix the alcohol and water, digest the soap with the mixture by a water-bath until dissolved; filter, and having added the camphor and oil, mix the whole thoroughly together.

This liniment is much in favour for lame joints, sprains, etc.

PRIDE OF INDIA LINIMENT.

Alcohol	½ pint.
Gum Camphor	2 ounces.
Linseed Oil	1 quart.
Chloroform	2 ounces.
Tincture Conium	2 ,,

Mix.

Used in croup, and a good remedy for toothache.

ST. JACOB'S OIL.

(Said to be.)

Oil of Sassafras	½ ounce.
Oil of Origanum	1 ,,
Chloroform	1 ,,
Sulph. of Ether	1 ,,
Chloral Hydrate	1 ,,
Tincture of Opium	½ ,,
Gum Camphor	1 ,,
Alcohol	½ gallon.

Dissolve the camphor in a portion of alcohol, and rub thoroughly in a mortar; then add the other ingredients, and mix.

Used externally and internally.

Dose.—One-half teaspoonful as often as needed.

YOUNG'S LINIMENT.

Black Oil	. . . 2 ounces each.
Alcohol	
Tincture Arnica	
British Oil	
Tincture Stramonium	
Oil of Tar	1 ounce.

Mix.

This is good for inflammations.

GREAT AFRICAN WONDER.

Chloroform	1 ounce.
Oil of Origanum	2 ,,
Oil of Sassafras	2 ,,
Oil of Turpentine	1 ,,
Tincture of Opium	1 ,,
Spirits of Camphor	2 ,,
Alcohol	1 quart.

Mix. For external and internal use.

Dose.—For rheumatism, headache, colic, etc., 2 teaspoonfuls, in ⅓ glass of water.

BRODIE'S LINIMENT.

Sulphuric Acid	1 drachm.
Olive Oil	1 ounce.
Turpentine	1 ,,

Add the acid to the oil very slowly, stirring constantly, and when cold add the turpentine.

BLACK LINIMENT.

Sulphuric Acid	1 drachm.
Olive Oil	1 ounce.
Turpentine	½ ,,

Mix the acid with the oil, very slowly, and when cold add the turpentine. This is a good counter-irritant, and excellent for swellings of the joints; apply twice a day, on lint.

CENTAUR LINIMENT.

Oil of Sassafras	2 ounces.
Oil of Spike	3 ,,
Oil of Peppermint	1 ,,
Oil of Petroleum	3 ,,
Oil of Cloves	2 drachms.
Oil of Cinnamon	2 ,,
Oil of Cedar	2 ,,
Oil of Origanum	2 ounces.
Oil of Wormwood	2 ,,
Oil of Tansy	2 drachms.
Aqua Ammonia	2 ounces.
Tincture of Opium	2 ,,
Opodeldoc	2 ,,
Gum Camphor	2 ,,
Chloroform	2 ,,
Alcohol	1 gallon.

Mix.

This is an excellent liniment, and good in all cases where a liniment is needed.

GERMAN LINIMENT.

Oil of Origanum	½ ounce.
Oil of Sassafras	½ drachm.
Tincture of Capsicum	½ ounce.
Tincture of Camphor	½ ,,
Tincture of Aconite	½ ,,
Chloroform	4 drachms.
Comp. Soap Liniment	1 ounce.
Alcohol	2 quarts.

Mix. External, only.

LOOMIS' LINIMENT.

Oil of Cedar	1 drachm.
Oil of Hemlock	2 ,,
Oil of Origanum	1 ,,
Oil of Cajeput	2 ,,
Oil of Sassafras	5 ,,
Powdered Capsicum	1½ ,,

Alcohol, sufficient to make 1 pint.

Macerate for five days, then filter. For internal or external use.

Dose.—One-half teaspoonful.

MAGNETIC LINIMENT.

Sulph. Ether	1 ounce.
Muriate of Ammonia	3 drachms.
Oil of Origanum	2 ,,
Tincture of Cantharides	2 ,,
Alcohol	1 pint.

Mix.

Bathe the affected parts, and rub well in; this is a good stimulating liniment.

MANNING'S LINIMENT.

Aqua Ammonia	1 ounce.
Oil of Rosemary	3 drachms
Oil of Lavender	2 ,,
Gum Camphor	½ ounce.
Iodine	1 drachm.
Alcohol	1 pint.

Dissolve the camphor and iodine in the alcohol, then add the oils; lastly, add sufficient aqua ammonia to remove the dark colour.

NEWTON'S LINIMENT.

Ammonia Liniment, U. S. P.	4 ounces.
Castile Soap Liniment	2 ,,
Chloroform	1 ,,
Tincture of Arnica	½ ,,
Tincture of Iodine	12 minims.
Essential Oil of Turpentine	4 ounces.
Essential Oil of Rosemary Essential Oil of Origanum	1 ounce each.
Essential Oil of Lavender	12 drops.

Mix thoroughly. Apply on a piece of cotton or lint.

GUNN'S RHEUMATIC LINIMENT.

Linseed Oil	1 ounce.
Oil of Amber	1 ,,
Oil of Cedar	1 ,,
Gum Camphor	½ ,,

Sulph. Ether, sufficient to dissolve.

Olive Oil Turpentine Laudanum	½ ounce each.

Mix.

Use Castile soap, and rub in the liniment three times a day.

GREAT MOGUL LINIMENT.

Acetate of Morphia	12 grains.
Aqua Ammonia Olive Oil Chloroform	1 ounce each.

Mix.

For external use only.

BRITISH OIL.

American Petroleum	4 ounces.
Oil of Juniper	½ ,,
Oil of Turpentine	4 ,,
Oil of Amber	1 pint.
Flaxseed Oil	3 ,,

Mix together thoroughly by agitation.

HAARLEM OIL.

Crude Oil of Amber	¾ pint.
Barbadoes Tar	1 ,,
Balsam of Sulphur	3 ,,
Linseed Oil	4 ,,
Oil of Turpentine	8 ,,

Mix together thoroughly.

SMITH'S ELECTRIC OIL.

Linseed Oil	2 pints.
Olive Oil	4 "
Sassafras Oil	½ "
Chloroform	4 ounces.

Mix.

FLUID LIGHTNING.

Alcohol	4 ounces.
Glycerine	1 "
Extract of Aconite	1 grain.
Oil of Mustard	1 drachm.

Mix. This formula has been sold to physicians at from £5 to £20 each. Used in rheumatism and sciatica, externally.

FARMINGTON LINIMENT.

(*For Rheumatism.*)

Olive Oil	each 1 ounce.
Spirits of Camphor	
Chloroform	
Oil of Sassafras	½ "

Add the oil of sassafras with the olive oil, then the camphor, and lastly the chloroform. Apply three or four times a day, and always rub towards body.

COMMON LINIMENT.

Aqua Ammonia	½ ounce.
Tincture of Arnica	1 "
Tincture of Capsicum	1 "
Tincture of Myrrh	1 "
Sulph. Ether	1 "
Oil of Wintergreen	2 drachms.
Oil of Spearmint	2 "
Tincture of Camphor	1 ounce.
Alcohol	1 quart.

Mix. This is a good, useful liniment.

CROTON LINIMENT.

Tincture of Iodine	3 drachms.
Sulph. Ether	4 "
Croton Oil	2 "
Iodide Potassa	20 grains.
Alcohol	1 ounce.

Mix. This liniment is used for a blister, and also as a counter-irritant.

RHEUMATIC LINIMENT.

Chloral Hydrate	4 drachms.
Camphor	4 "
Tincture Aconite Root	1 ounce.
Oil of Cajeput	3 drachms.
Alcohol, sufficient to make	4 ounces.

Mix. Apply with a camel-hair pencil over the parts affected.

CARTER'S LINIMENT.

Oil of Turpentine	½ ounce.
Oil of Origanum	½ "
Oil of Cedar	½ "
Oil of Sassafras	½ "
Oil of Hemlock	½ "
Balsam of Fir	1 "
Chloroform	1 "
Gum Camphor	½ "
Sulph. Ether	1 "
Tincture of Capsicum	2 "
Oil of Wormwood	½ "
Alcohol	½ gallon.

Mix.

CARPENTER'S LINIMENT.

Aqua Ammonia	1 ounce.
Chloroform	1 "
Olive Oil	1 "
Sulph. Morphia	10 grains.
Alcohol	8 ounces.

Mix.

For pains in the back and limbs; apply often and rub well in. External only.

METZ BALSAM.

(*Green Oil.*)

Linseed Oil Olive Oil	6 ounces each.
Expressed Oil of Laurel	1 ounce.
Turpentine	2 "
Powdered Aloes	2 drachms.
Powdered Sulphate of Zinc	1½ "
Powdered Verdigris	3 "
Oil of Juniper	4 "
Oil of Cloves	1 "

Mix the turpentine and the oil of laurel with the linseed and olive oil, over a gentle fire; add the powders, and when cool, the essential oils. The bottle must be shaken before using.

Used for dressing old sores, ulcers, etc.

COOK'S MAGNETIC LINIMENT.

Oil of Amber	8 ounces.
Gum Camphor	8 "
Castile Soap	2 "
Beef Gall	4 "
Aqua Ammonia	12 "
Alcohol	1 gallon.

Cut the soap into fine pieces before adding to the other ingredients. Mix, and shake occasionally. Thi is a good cheap liniment.

MATTERN'S CREAM CAMPHOR.

(Liniment.)

White Castile Soap	1	ounce.
Boiling Water, sufficient to dissolve.		
Carbonate of Ammonia	½	,,
Gum Camphor	½	,,
Tincture of Opium	½	,,
Spirits of Turpentine	2	,,
Oil of Origanum	½	,,
Water, sufficient to make	2	pints.

Mix, and thoroughly dissolve. A good stimulating liniment.

NEURALGIA LINIMENT.

Tincture of Aconite Root	1	ounce.
Tincture of Arnica	2	,,
Oil of Camphor	1	,,
Oil of Cajeput	1½	,,
Chloroform	1	,,
Alcohol	1	pint.

Mix. To be well rubbed in.

IODIDE OF AMMONIA LINIMENT.

(Giles' Liniment.)

Iodine	15	grains.
Alcohol	8	ounces.
Gum Camphor	2	drachms.
Oil of Lavender	1	,,
Oil of Rosemary	1	,,
Water of Ammonia	1	ounce.

This has been largely advertised as a patent medicine—Giles' Liniment—which is heralded as a new discovery. It is largely used in a great many of the cities and towns of the United States.

HAMLIN'S WIZARD OIL.

Chloroform	2	ounces.
Oil of Sassafras	2	,,
Tincture of Camphor	2	,,
Tincture of Opium	2	,,
Powdered Cayenne	2	,,
Aqua Ammonia	2	,,
Alcohol	1	gallon.

Filter, and colour to suit.

KING OF PAIN.

Alcohol	1	pint.
Oil of Origanum	2	ounces.
Oil of Cedar	1	,,
Oil of Sassafras	1	,,
Oil of Hemlock	1	,,
Oil of Turpentine	3	,,
Gum Camphor	2	,,
Tincture of Lobelia	2	,,
Tincture of Arnica	2	,,
Tincture of Capsicum	3	,,
Aqua Ammonia	3	,,
Sweet Oil	3	,,

Mix. Use with Castile soap, and apply three times a day.

CHAMBERLAIN'S RELIEF.

Tincture of Capsicum	1	fl. ounce.
Spirits of Camphor	¾	,, ,,
Tincture Guaiac.	1	,, ,,
Alcohol	1	,, ,,

Mix well together.

BLACK OIL LINIMENT.

Quicksilver	½	drachm.
Nitric Acid	1	,,
Sulphuric Acid	2	,,
Olive Oil	1	ounce.
Turpentine	1	,,
Cotton Cloths, q. s.		

Mix the acids together very slowly, avoid the fumes; this must be made out of doors. When the acids are mixed, add the turpentine and olive oil, together with all the cotton cloths it will dissolve.

BRODIE'S ASTHMA LINIMENT.

Alcohol	8	ounces.
Oil of Stillingia	4	,,
Oil of Lobelia	1	,,
Oil of Cajeput	2	,,

Mix. Rub the spinal column and neck three times a day.

SOLUTION CARMINE.

Carmine, No. 40 (in fine powder)	1	drachm.
Aqua Ammonia	½	ounce.
Water	3½	,,

Dissolve by triturating with the ammonia; add the water. Keep in a tight bottle.

BRITISH OIL.

Oil of Turpentine	4	ounces.
Oil of Flaxseed	3	pints.
Oil of Amber	1	,,
Oil of Juniper	½	ounce.
Barbadoes Petroleum	2	,,
American Petroleum	2	,,

Mix.

HINES' LINIMENT.

Aqua Ammonia	2	ounces.
Tincture of Opium	½	,,
Tincture of Arnica	1	,,
Chloroform	1	,,
Gum Camphor	1½	,,
Alcohol	5	,,

Mix. Apply to the parts affected, by means of a flannel saturated with this liniment.

HOBBS' KEROSENE LINIMENT.

Kerosene Oil	2 ounces.
Tincture of Opium	4 drachms.
Tincture of Arnica	5 "
Tincture of Stramonium	4 "
Aromatic Spts. of Ammonia	6 "
Spirits of Camphor	5 "
Oil of Origanum	4 "
Chloroform	1 ounce.

Mix. Rub in well twice during twenty-four hours. This is one of the best liniments in use, and as good for beast as man.

OSGOOD'S LINIMENT.

Castile Soap	2 ounces.
Gum Myrrh	2 "
Gum Opium	1½ "
Gum Camphor	2 "
Oil of Origanum	2 "
Tincture of Arnica	2 "
Chloroform	½ "
Alcohol	1 quart.

Mix and let stand for a week, occasionally shaking, and it is ready for use.

FLAGG'S RELIEF.

Oil of Cloves	1 fl. drachm.
Oil of Sassafras	2 " "
Spirits of Camphor	1½ " ounce.

Mix well together.

JOHNSON'S LINIMENT.

Chloroform	½ ounce.
Tincture of Myrrh	1 "
Tincture of Capsicum	1 "
Tincture of Arnica	1 "
Sulph. Ether	½ "
Oil of Spearmint	2½ drachms
Oil of Wintergreen	2½ "
Aqua Ammonia	2 ounces.
Alcohol	1 quart.

Mix.

RADWAY'S READY RELIEF.

Soap Liniment	1½ fl. ounce.
Tincture of Capsicum	1 " "
Water of Ammonia	½ " "
Alcohol	½ " "

Mix thoroughly.

UNCLE SAM'S NERVE AND BONE LINIMENT.

Oil of Origanum	4 ounces.
Oil of Rosemary	4 "
Oil of Amber	4 "
Oil of Hemlock	4 "
Turpentine	4 pints.
Oil of Linseed	6 "

Mix. For external use only.

OINTMENTS.

ALUM AND CALOMEL OINTMENT.

Calomel	2 drachms.
Powdered Alum	½ ounce.
Sugar of Lead	½ "
Oil of Turpentine	2 drachms.
Simple Ointment	1½ ounce.

Mix. This is a valuable remedy in tinea capitis. The simple ointment is made as follows:—

SIMPLE OINTMENT.

White Wax	1 pound.
Prepared Lard	2 "

Mix.

CAMPHOR OINTMENT.

Powdered Camphor	15 grains.
Glycerine, q. s.	
Simple Ointment	1 ounce.

Mix. Useful in erythema, and in vesicular and equinous affections of the skin.

BASILICON OINTMENT.

(*Resin Cerate.*)

Resin	10 ounces.
Yellow Wax	4 "
Lard	16 "

Melt them together over a slow fire; strain the mixture through muslin, and stir constantly until cold. This is one of the best known and most reliable dressings for healing old burns, scalds, and all kinds of sores.

CANTHARIDES CERATE.

(*Blister Ointment.*)

Cantharides (in fine powder)	12 ounces.
Yellow Wax	7 "
Resin	7 "
Lard	10 "

To the wax, resin and lard, previously melted together and strained through muslin, add the cantharides, and by means of a water-bath keep the mixture in a liquid state for ½ hour, then remove from the fire and stir constantly until cool. This forms the usual blistering plaster.

OINTMENT OF ROSE WATER.

(Cold Cream.)

Oil of Sweet Almonds	3½ ounces.
Spermaceti	1 "
White Wax	2 drachms.
Rose Water	2 fl. ounces.

Melt together, by means of a water-bath, the oil, spermaceti and wax; then gradually add the rose water, and stir constantly while cooling. A small portion of glycerine may be added, if desired, before cooling. When properly made, cold cream is one of the most elegant and grateful preparations in use for chapped hands and lips, frost-bite, raw surfaces, etc.

STRAMONIUM OINTMENT.

Fresh Lard	2 pounds.
Stramonium Leaves (bruised), sufficient.	

Place the lard in a kettle, over a slow fire, and put in all the stramonium leaves it will hold; let it simmer for an hour, remove from the fire, and strain while hot; expressing the leaves dry. This forms a simple and good ointment to relieve pain; and is much used as an addition to pile ointments.

EYE OINTMENT.

Pulverised Opium	8 grains.
Pulverised Camphor	8 "
Pulverised Calomel	30 "
Oil of Sweet Almonds	1 drachm.
Cocoa Butter	1 "

Mix. Rub a small portion on the eyelid before going to bed.

COMPOUND BUTTER OINTMENT.

Burgundy Pitch	4 ounces.
Red Oxide of Mercury	1 "
Red Oxide Lead	1 "
Venice Turpentine	1 "
Fresh Butter	16 "

Melt the butter and pitch over a slow fire; add the turpentine; and, lastly, the two oxides, finely powdered, stirring constantly until the ointment is cold.

DESHLER'S SALVE.

Flaxseed Oil	8 ounces.
Turpentine	5½ "
Yellow Wax	12 "
Resin	12 "
Suet	12 "

Melt all together and strain the mixture well, stirring until cold.

MAGNETIC OINTMENT.

Prepared Lard	8 ounces.
Raisins	3 "
Fine-cut Tobacco	3 "

Simmer well together, then remove from the fire and strain. This is a fine remedy for salt rheum, tetter, etc.

BECKER'S EYE SALVE.

Calamine	1½ drachm.
Tutty	1½ "
Red Oxide of Mercury	6 "
Powdered Camphor	1 "
Oil of Sweet Almonds	2 "
White Wax	1 ounce.
Fresh Butter	8 "

Reduce the minerals to a fine powder and incorporate with the oils, in which the camphor has been dissolved, with the butter and wax previously melted. Unsalted butter should be used.

GREEN MOUNTAIN SALVE.

Powdered Verdigris	1 ounce.
Oil of Wormwood	½ "
Venice Turpentine	1½ "
Oil of Red Cedar	1 "
Oil of Origanum	1 "
Oil of Hemlock	1 "
Balsam Fir	1 "
Mutton Tallow	4 "
Beeswax	4 "
Burgundy Pitch	4 "
Resin	5 pounds.

Melt the resin, pitch, beeswax, mutton tallow and balsam together; now add the oils with the verdigris, together with the other ingredients, and mix thoroughly.

JUDKINS' OINTMENT.

Linseed Oil	1 pound.
Red Lead	4 ounces.
Spts. of Turpentine	½ drachm.
Sugar of Lead	1 "

The oil is first boiled in an earthen pot, after which the lead is gradually added; finally, the other ingredients.

MILD OXIDE OF ZINC OINTMENT.

Olive Oil	2 pounds.
Spermaceti	12 ounces.
White Wax	9 "
White Oxide of Zinc	4 "
Acid, Benzoic	2 drachms.
Sulphate of Morphia	2 "
Otto of Roses	20 drops.

The first three articles are to be melted by a gentle heat, and, while warm, sprinkle in the zinc, and when nearly cold add the benzoic acid and otto of roses.

PETIT'S EYE SALVE.

White Wax	4 ounces.
Spermaceti	12 "
Olive Oil	2 pounds.
White Precipitate	3 ounces.
Oxide of Zinc	4 "
Benzoic Acid	2 drachms.
Sulphate of Morphia	48 grains.
Oil of Rosemary	20 drops.

Melt the sperm, wax, and olive oil together.

Rub the precipate, zinc, and benzoic acid in a portion of the warm mixture; add together, and lastly add the rosemary; stir until cool.

OXIDE OF ZINC OINTMENT.

Prepared Lard	5 troy ounces.
Olive Oil	5 „ „
White Wax	2½ „ „
Spermaceti	2½ „ „
Oxide of Zinc	2½ „ „
Powdered Gum Benzoin	½ „ „

Melt the lard, olive oil, white wax, and sperm by a gentle heat; sprinkle in the zinc, and when nearly cold add the gum, and mix all thoroughly. An excellent ointment for sores that are indisposed to heal.

CAZEAUX NIPPLE OINTMENT.

White Wax	4 ounces.
Oil of Sweet Almonds	1 „
Honey (clear)	½ „
Balsam of Peru	2½ drachms.

Melt the wax and honey by a gentle heat, then add the oil of almonds, and when nearly cold add the balsam of Peru.

CROUP OINTMENT.

Lobelia Seed (powdered)	1 ounce.
Maccoboy Snuff	1 „
Prepared Lard, sufficient to make an ointment.	

Spread upon linen, and apply over the throat and chest as long as the case requires a relaxant.

KITTRIDGE'S OINTMENT.

Quicksilver	1 ounce.
Nitric Acid	1 „
Prepared Lard	½ pound.

Let the silver and the acid stand together until the silver is set, then add to the lard previously melted, and mix thoroughly. This is a fine remedy for pimpled face, prairie itch, itch, etc.

RADIN'S CAMPHOR OINTMENT.

Purified Lard	½ ounce.
Purified Suet	½ „
White Wax	½ „
Oil of Bayberries	½ „
Gum Camphor	2 drachms.

Melt together, except the camphor, which must be added to the mixture when nearly cold.

PIMPLE OINTMENT.

Cold Cream	1 ounce.
Nitrate of Bismuth	40 grains.
White Precipitate	40 „
Oil of Bergamot	20 drops.

Mix. This is a fine preparation to reduce pimples, etc., from the face.

FAVOURITE OINTMENT.

Red Oxide of Mercury	½ ounce.
Sugar of Lead	½ „
Burnt Alum	1 „
White Vitriol	2 drachms.
Mutton Tallow	½ pound.

Melt the tallow, and add the other ingredients while warm; mix thoroughly, and stir until cold.

GREEN OINTMENT.

Clear Honey	½ pound.
Beeswax	½ „
Turpentine	1 ounce.
Oil of Wintergreen	2 „
Tincture of Opium	2 „
Powdered Verdigris	2 drachms.
Refined Lard	1½ pound.

Melt the lard and beeswax together by a gentle heat, then add other ingredients, and mix thoroughly.

CHILBLAIN OINTMENT.

Powdered Nutgalls	1 drachm.
Glycerine	2 „
Simple Ointment	7 „

Mix and make a uniform mass. A good dressing for broken chilblains.

MEAD'S OINTMENT.

Aqua Fortis	1 ounce.
Quicksilver	1 „
Castile Soap (dissolved)	1 „
Prepared Chalk	1 „
Prepared Lard	1 pound.

Mix the aqua fortis and quicksilver in an earthenware vessel, and when done effervescing, mix with the other ingredients. This is an excellent remedy for salt rheum.

PILE OINTMENT, No. 1.

Powdered Galls	40 grains.
Powdered Opium	20 „
Simple Ointment	½ ounce.
Stramonium Ointment	½ „

Mix. Apply two or three times a day.

PILE OINTMENT, No. 2.

Carbonate of Lead	½ ounce.
Sulphate of Morphia	15 grains.
Stramonium Ointment	1 ounce.
Olive Oil	20 drops.

Mix, and apply three times a day as occasion and pain may require.

SISSON'S OINTMENT.

Best Brandy	8 ounces.
Turpentine	1 gill.
Gum Camphor	1 ounce.
Beef's Gall	8 ,,
Neat's Foot Oil	1 pint.

Dissolve the camphor in the brandy; add the other ingredients, and mix well.

ANDERSON'S SOOTHING OINTMENT.

Oxide of Bismuth	½ ounce.
Oleic Acid	1 ,,
White Wax	1½ ,,
Vaseline	4½ ,,
Oil of Rose	q. s.

Mix. Add perfume when mixture is nearly cold.

IODOFORM OINTMENT.

Iodoform	10 grains.
Oil of Eucalyptus	1 drachm.
Cosmoline	1 ounce.

Mix.

CITRINE OINTMENT.

Mercury	4 ounces.
Nitric Acid, C. P.	12 fl. ounces.
Neat's Foot Oil	8 ,, ,,
Lard	2½ pounds.

Dissolve the mercury in the acid. Heat the lard and oil to 180°, then add the dissolved mercury all at once. Commence stirring, and continue doing so until the ointment is cold, or about of the consistency of molasses. Toward the latter end of the process, the vessel may be set in one containing cold water, thus hastening the cooling. I wish to impress it firmly upon the minds of all trying this process, that it is absolutely necessary to continue the stirring until the completion of the process. The above gives an ointment of good consistency, bright lemon colour, without disagreeable smell, and keeps.

PILLS.

Medicines adapted to the pilular form are powders in less than 15 grain doses; gum-resins in extracts, and oleo-resins and oils in small proportions.

Unadhesive Materials.—Calomel, Dover's powder, sub. nit. bismuth, morphia, acetas, strychnia, pulv. digitalis, pulv. ipecac., plumbi acetas, ant. et pot. tartrate, ant. sulph., argenti nitras, argenti oxidum, ferri pulvis, ferri sub. carb., etc.

Medicinal Excipients.—Extracts, pil. hydrarg., pil. copaibæ, pil. ferri carb., terebinthina; with moisture, powd. aloes, rheum, kino, tannin, opium, scilla, ferri citras, assafœtida, etc.

A GOOD EXCIPIENT FOR PILLS.

Starch	4 drachms.
Glycerine	3 ounces.

Mix, and heat together by means of a water-bath until a gelatinous mass is formed.

Excipients should be added to the pill cautiously or it will become too soft. If this occurs, a dryer will be needed. Powdered acacia, powdered starch, powdered licorice, etc., all answer this purpose.

PILLS OF ANTIMONY (COMP.).

(*Plummers' Pills.*)

Sulphuretted Antimony	120 grains.
Mild Chloride of Mercury	120 ,,
Guaiac, powdered	½ ounce.
Molasses, sufficient.	

Mix.

Make 240 pills.

Dose.—One to three pills.

GAMBOGE PILLS (COMPOUND).

Gamboge	1 drachm.
Aloes	1 ,,
Compound Powder of Cinnamon	1 ,,
Soap	2 ounces.
Syrup, sufficient.	

Make into 3-grain pills.

Dose.—One to three pills.

PILLS OF COPAIBA.

Solid Copaiba	600 grains.
Magnesia	60 ,,

Make 200 pills.

Dose.—One to three pills.

PILLS OF ALOES AND ASSAFŒTIDA.

Aloes	3 drachms.
Castile Soap	3 ,,
Pulv. Assafœtida	40 grains.

Make into 3-grain pills.

Dose.—Two to five.

TONIC AND STOMACHIC PILLS.

Aqueous Ext. of Cinch.	20 grains.
Ferri Subcarb.	12 ,,
Syr. Aurant. Cort.	q. s.

Make 12 pills.

Dose.—One every four hours.

QUININE AND CAMPHOR PILLS.

Ext. of Cinch.	1 drachm.
Pulv. Camphor	12 grains.
Pulv. Opii	1 ,,
Pulv. Cinch.	q. s.

Make 12 pills.

Dose.—One every three hours.

ANTISPASMODIC PILLS.

Ext. of Cinch.	2 drachms.
Catechu	2 ,,
Pulv. Assafœtida	40 grains.
Nitrate of Potass.	40 ,,

Make 50 pills.

Dose.—One every two or three hours, or oftener if needed.

PILLS, BROMIDE OF IRON.

Brom. Ferri Pulv.	12 grains.
Confect. Rosæ.	18 ,,
Gum Acacia	12 ,,

Make 20 pills.

Dose.—Take two in the morning, and two in the evening. Useful in hypertrophy of the heart and scrofulous affections.

PILLS OF THE ARSENATE OF IRON.

Ferri Protox. Arsen.	3 grains.
Ext. of Humuli	2 drachms.
Pulv. Althæ	30 grains.
Simple Syrup, q. s.	

Make 48 pills.

Dose.—Take one every day. Useful in scrofulous or cancerous affections.

PILLS OF ALOES AND IRON.

Socotrine Aloes	1 ounce.
Ginger Jam	2 ,,
Sulphate of Iron	2 ,,
Extract of Conium	1 ,,

Make into 3-grain pills.

Dose.—One or two pills.

EMMENAGOGUE PILLS.

Ferri Sulph.	20 grains.
Pulv. Aloes	20 ,,
Saponis Castile	20 ,,

Make 10 pills.

Dose.—One, morning and night.

SULPHATE OF IRON PILLS (COMP.).

Ferri Sulph.	1 ounce.
Ext. of Anthem	1½ ,,
Ol. Mentha Pip.	1 fl. drachm.
Syr. Simp., q. s.	

Dose.—Take 5 to 10 grains. Useful as emmenagogue.

EMMENAGOGUE PILLS.

FORMULA No. 1.

Ferri Sulph.	30 grains.
Galbanum	1½ drachm
Myrrh	1½ ,,
Syr. Aurant. Cort., q. s.	

Make pills, 2 grains each.

Dose.—Take six, every three hours.

FORMULA No. 2.

Acid Tannic	12 grains.
Syr. Simple, q. s.	
Ft. Pil., No. 8.	

Dose.—One, every two or three hours, in gonorrhœa.

FORMULA No. 3.

Acid Tannic.	20 grains.
Morphiæ Sulph.	1 ,,
Mucilage Acacia, q. s.	

Make 10 pills.

Dose.—Take one every two or three hours.

Useful in diarrhœa and dysentery.

FORMULA No. 4.

Acidi Gallici	20 grains.
Ext. of Gentianæ	10 ,,
Syrupi, q. s.	

Make 10 pills.

Dose.—Take 1 every hour. Useful in hemorrhages.

PILLS OF CAMPHOR AND KINO.

Pulv. Kino	40 grains.
Camphor	30 ,,
Pulv. Aromatic	20 ,,
Oxide of Zinc	10 ,,

Make 20 pills.

Dose.—Two, morning and night.

IN ASTHMA.

Pulv. Opii	1 grain.
Castorei	9 ,,
Digitalis	2 ,,
Pil. Scillæ, compound	8 ,,

Mix. Make 4 pills.

Dose.—One, three times a day.

GOOD LAXATIVE PILLS.

Podophyllin	2 grains.
Powdered Rhubarb	14 ,,
Powdered Capsicum	4 ,,

Make 12 pills.

Dose.—Two to four pills, at night.

IN GOUT OF THE STOMACH.

Ammon. Carb.	20 grains.
Pulv. Capsici	20 ,,
Pulv. Caryoph.	20 ,,
Pulv. Macis	20 ,,
Ol. Carui	5 drops.
Ext. of Gentian	5 ,,
Syr. Simp., q. s.	

Mix. Make 20 pills.

Dose.—One, every two hours.

IN SPASMODIC COUGH.

Oxide of Zinc	3 grains.
White Sugar	5 ,,
Pulv. Myrrh	1½ drachm.
Conserve Roses, q. s.	

Make 20 pills.

Dose.—One, to be taken twice a day.

IN CHOREA AND EPILEPSY.

Argent. Nit.	3 grains.
Pulv. Opium	30 ,,
Pulv. Camphor	20 ,,
Pulv. Moschus	20 ,,

Make 24 pills.

Dose.—One, morning and night.

TO PRODUCE SLEEP.

Ext. Opii Aqueous	2 grains.
Camphor	2 ,,
Simple Syrup, q. s.	

Make 1 pill.

Dose.—To be taken at bedtime.

PILLS FOR INTERMITTENT FEVER.

Cupri Sulph.	6 grains.
Ext. Cinchonæ	32 ,,
Simple Syrup, q. s.	

Make 16 pills.

Dose.—Take one four times a day.

RUFUS' PILLS (CATHARTIC).

Pulv. Aloes	2 ounces.
Pulv. Myrrh	1 ,,
Crocus	½ ,,
Simple Syrup, q. s.	

Make 480 pills.

Dose.—Take three to six pills for a dose.

Useful in constipation.

PILLS IN NERVOUS IRRITABILITY, ETC.

Zinci Valerianas	18 grains.

Make 12 pills.

Dose.—One, three times a day.

FOR NEURALGIA.

Oxide of Zinc	1 drachm.
Ext. Hyoscyamus	1 ,,
Hellebore Nig.	1 ,,
Pulv. Glycyrrhiza Rad., q. s.	

Make 72 pills.

Dose.—One pill daily.

PILLS FOR EPILEPSY AND CHOREA.

Oxide of Zinc	40 grains.
Conserve of Roses, q. s.	

Make 10 pills.

Dose.—One, three or four times a day.

EMMENAGOGUE PILLS.

Pulv. Myrrh	1½ drachm.
Ext. Hyoscyamus	30 grains.
Pulv. Scillæ	30 ,,
Aqua, q. s.	

To make 30 pills.

Dose.—Two or three daily.

Use.—To promote the menstrual discharge.

SULPHATE OF IRON PILLS.

Ferri Sulph.	3 drachms.
Socotrine Aloes	2 ,,
Aromatic Powder	6 ,,
Confection of Roses	8 ,,

Pulverise the iron and aloes separately. Mix all the ingredients in a proper mass, then make pills five grains each.

Dose.—One to three pills a day.

HOOPER'S FEMALE PILLS.

Aloes, Soc.	8 ounces.
Dried Sulphate of Iron	17½ drachms.
Extract of Black Hellebore	2 ounces.
Myrrh	2 ,,
Soap	2 ,,
Powdered Canella	1 ,,
Powdered Ginger	1 ,,

Beat them well together into a mass, with syrup or water, and divide into pills, each containing two and one-half grains.

Dose.—Take one every four hours.

IN NEURALGIA.

Extract of Hyoscyamus	½ drachm.
Extract of Belladonna	5 grains.
Sulph. Morphia	40 ,,
Sulph. Quinine	2 ,,

Mix. Make 20 pills.

Dose.—One every two hours.

HOLLOWAY'S CELEBRATED PILLS.

Aloes	2 drachms.
Rhubarb	2 „
Capsicum	20 grains.
Saffron	5 „
Sulphate of Soda	5 „

Make 100 pills.
Dose.—One three times a day.

IN RHEUMATISM.

Pulv. Antimony	10 grains.
Pulv. Opii	2 „
Hyd. Chlo. Mit.	2 „
Confection of Roses, q. s.	

Mix. Make 4 pills.
Dose.—Take two at bedtime.

IN RHEUMATISM.

Ant. et Potas. Tart.	2 grains.
Pulv. Opii	6 „
Camphor	36 „
Spts. Rectif.	3 drops.
Conserve of Roses, q. s.	

Mix. Make 12 pills.
Dose.—One every fourth hour.

PILLS FOR HABITUAL COSTIVENESS.

Pulv. Ipecac.	10 grains.
Hydrarg. Chlor. Mit.	3 „
Ext. Taraxaci	40 „

Mix. Make 30 pills.
Dose.—One three times a day.

COMPOUND CATHARTIC PILLS (IMPROVED).

(*Vegetable.*)

Powd. Ext. of Colocynth (Comp.)	100 grains.
Powd. Ext. of Jalap	50 „
Powd. Ext. of Hyoscyamus	25 „
Powd. Ext. of Dandelion	25 „
Leptandrin	50 „
Podophyllin	25 „
Oil of Peppermint	8 drops.

Make 100 pills.
Dose.—One to three pills.

DR. VANCE'S RHEUMATIC PILLS.

Ext. Colchici Acetici	½ drachm.
Pulv. Ipecac. Comp.	1½ „
Dover's Powder	3 grains.

Make 24 pills.
Dose.—Two at night and one before breakfast.

IN SCROFULOUS AND SKIN DISEASES.

Green Iodide of Mercury	10 grains.
Resin of Guaiacum	40 „
Ext. of Conium	30 „

Triturate the resin of guaiacum into a mass with a little alcohol; then incorporate with it the extract of conium and iodide of mercury, and divide into 20 pills.
Dose.—One three times a day.

ECLECTIC LIVER PILLS.

Podophyllin	10 grains.
Leptandrin	20 „
Sanguinaria	10 „
Extract of Dandelion	20 „

Mix into 20 pills.

Useful in chronic diseases of the liver. Take a pill at night for several days, or two may be taken at first, to move the bowels, then one daily.

COUGH PILLS.

Powdered Assafœtida	1 drachm.
Sulph. of Morphia	3 grains.

Mix. Make 30 pills.
Dose.—One or two at bedtime.

NEURALGIA PILLS.

(*Dr. Gross.*)

Sulphate of Quinine	200 grains.
Sulphate of Morphia	5 „
Powdered Extract of Aconite	50 „
Sulphate of Strychnia	3 „
Arsenious Acid	5 „

Make 100 pills.
Dose.—One to two pills.

COMPOUND CATHARTIC PILLS.

Ext. of Colocynth Comp.	½ ounce.
Extract of Jalap	180 grains.
Calomel	180 „
Gamboge	40 „

Make 180 pills.
Dose.—One to four pills.

WEBSTER'S DINNER PILLS.

Powdered Socotrine Aloes	360 grains.
Powdered Mastic	120 „
Powdered Red Rose Leaves	120 „

Make 200 pills.
Dose.—One to three.

COOK'S PILLS.

Powdered Aloes, Soc.	100 grains
Powdered Rhubarb	100 „
Calomel	75 „
Powdered Castile Soap	25 „

Make 100 pills.
Dose.—Two to four pills.

AGUE PILLS.

Blue Mass	14 grains.
Sulph. of Quinine	24 ,,
Oil of Black Pepper	12 drops.

Make 12 pills.

Dose.—One pill every three hours, preceding the chill.

HOWLETT'S AGUE PILLS.

Quinine	2 drachms.
Powdered Gum Myrrh	1 ,,
Powdered Capsicum	1 ,,

Make into 64 pills.

Dose.—One pill.

SAPPINGTON'S PILLS.

(*For Ague.*)

Sulph. of Quinine	480 grains.
Powd. Ext. of Licorice	360 ,,
Powd. Gum Myrrh	120 ,,
Oil of Sassafras	30 drops.
Syrup, q. s. to form a mass.	

Make into 480 pills.

Dose.—One to three pills, in absence of fever.

INGALL'S PILLS.

Pulverised Gamboge	50 grains.
Aq. Ext. of Aloes Socot.	50 ,,
Podophyllin	50 ,,

Mix, and make 100 pills.

Dose.—One or two pills.

LEE'S PILLS.

Powdered Aloes	1 ounce.
Powdered Scammony	½ ,,
Powdered Gamboge	3 drachms.
Powdered Jalap	2 ,,
Powdered Soap, Castile	1 ,,

Make into 3-grain pills.

Dose.—One to three pills.

BARCLAY'S ANTIBILIOUS PILLS.

Extract of Colocynth	2 drachms.
Extract of Jalap	1 ,,
Almond Soap	1½ ,,
Guaiacum	3 ,,
Tartarised Antimony	8 grains.
Oil of Juniper	4 drops.
Oil of Caraway	4 ,,
Oil of Rosemary	4 ,,

Form into a mass with syrup and divide into 3-grain pills.

Dose.—One to three pills.

SOLUTIONS.

SOLUTION CARBOLIC ACID.

Carbolic Acid, in crystals	1¾ ounce.
Glycerine and Water, each a sufficient quantity.	

Dissolve the carbolic acid in glycerine, about 2 ounces, to which add 14 ounces of water; when clear, add 2 ounces more water, and filter. If the solution is milky, clarify with glycerine. Used as a lotion, or in combination, whenever carbolic acid is indicated.

SOLUTION CITRATE OF BISMUTH.

Citrate of Bismuth and Ammonia	4 drachms.
Hot Water	4 ,,
Aqua Ammonia, about	½ ounce.

Rub the bismuth to a fine powder, and add it gradually, in small portions, to the hot water, rubbing it to a uniform consistency; then add enough aqua ammonia to make clear, and water enough to measure ½ pint; filter.

Dose.—One-half to one teaspoonful.

SOLUTION OF CITRIC ACID.

Citric Acid	8 ounces.
Hot Water	8 ,,

Dissolve the acid in the water, and add water to make 1 pint. Used mostly in making soda syrup and acid drinks.

DONOVAN'S SOLUTION.

Iodide of Arsenic	35 grains.
Red Iodide of Mercury	35 ,,
Distilled Water	½ pint.

Rub the iodides with ½ fluid ounce of water; when dissolved add the remainder of the water, and filter.

Uses.—Given in chronic cutaneous affections, by advice of a physician.

Dose.—Five drops, gradually increased.

HARLE'S SOLUTION.

Arsenious Acid	30 grains.
Carbonate of Soda (dried)	30 ,,
Distilled Water	6 ounces.
Cinnamon Water, q. s. to make	8 ,,

It is used for the same purposes and in the same doses as Fowler's.

FOWLER'S SOLUTION.

Arsenious Acid, in small fragments	64 grains.
Bicarbonate of Potassa	64 ,,
Distilled Water, q. s.	
Compound Spirits of Lavender	½ fl. drachm.

Boil the arsenious acid and the bicarbonate of potassa in a glass vessel, with 12 fluid ounces of distilled water till the acid is entirely dissolved in the solution; when cold, add the compound spirits of lavender, and afterwards sufficient distilled water to measure 1 pint.

Uses.—Given for skin diseases and in ague and intermittent fever.

Dose.—Five drops, gradually increased; to be well diluted.

LIQUOR CHLORINATE OF SODA.

(*Labarraque's Solution.*)

Chlorinated Lime	1 ounce.
Carbonate of Soda	2 „
Water	1 pint.

Dissolve the sodium in 4 ounces of the water, with the aid of heat. Triturate the lime with the rest of the water, adding a little at a time until mixed; set aside for twenty-four hours, then decant the clear liquid, and allow to drain, adding enough water to make 12 ounces of clear liquor. Add this to the solution of sodium, and mix thoroughly; lastly, keep the liquid in well-stopped bottles protected from the light.

Uses.—This preparation is largely used as an antiseptic, in putrid diseases, and as a topical application in unhealthy ulcers, diphtheria, scarlet fever, burns, etc.

It may be used as a gargle, or an injection, by being diluted with 8 to 12 parts of water.

Dose.—Internally, twenty to sixty drops diluted.

SOLUTION ACETATE OF AMMONIA.

Acetic Acid (dilute)	1 pint.
Carb. of Ammonia, q. s.	

Add the carbonate of ammonia to the acid until saturated or neutral, and filter.

A diaphoretic. Useful in low fevers, headache, and drunkenness.

Dose.—From one to two teaspoonfuls diluted.

SOLUTION OF IODINE.

(*Lugol's.*)

Iodine	½ ounce.
Iodide of Potassium	1 „
Water	10 „

Dissolve the iodide of potassium in the water, and add the iodine, previously rubbed to a fine powder. This solution is for internal use.

Dose.—Five to two drops, diluted with water.

LUGOL'S CAUSTIC SOLUTION OF IODINE.

Iodine	1 ounce.
Iodide of Potassium	1 „
Water	2 „

Mix and dissolve.

This is a powerful caustic for external application.

SOLUTION PERSULPHATE OF IRON

(*Monsel's Styptic.*)

Sulph. of Iron (coarse powder)	12 troy ounces.
Sulphuric Acid	1 „ „ + 30 grains.
Nitric Acid	1 „ „ + 300 „

Mix the acids with ½ pint of distilled water in a large porcelain capsule, and, having heated the mixture to the boiling point, add the sulphate of iron, one-fourth at a time, stirring often each addition, until effervescence ceases. Then keep the solution in brisk ebullition until nitrous vapours are no longer perceptible, and the colour assumes a ruby tint; lastly, when the liquid is cold, add sufficient distilled water to make it measure 12 fluid ounces.

Valuable to arrest bleeding by application, and should be kept in every family.

SOLUTION OF SALICYLIC ACID.

Salicylic Acid	1 ounce.
Bicarbonate of Soda	1 „
Glycerine	6 „
Water	9 „

Dissolve the bicarbonate of soda in the water, mix the acid with the glycerine. Then add enough of the solution of soda to the acid and glycerine to dissolve the acid. Make up the measure to 1 pint with water.

Good in rheumatism.

Dose.—One to three teaspoonfuls.

SOLUTION OF IODINE.

Iodine	2 grains.
Iodide of Potassium	4 drachms.
Peppermint Water	6 ounces.

Dissolve.

SOLUTION OF PHOSPHORIC ACID.

Glacial Phosphoric Acid	1 ounce.
Water, sufficient.	
Nitric Acid	40 grains.

Dissolve phosphoric acid in 3 ounces of water. Add the nitric acid, and boil until it is reduced to a syrupy consistence and free from the odour of nitric acid; then add enough water to make the measure 12½ ounces.

SOLUTION OF DIALYSED IRON.

In view of the widespread and rapidly increasing demand for this preparation, the following working formula, which has been tried with excellent success, may prove of interest and benefit:—

Solution Chloride of Iron	1 pint.
Water of Ammonia	2 „
Distilled Water	12 „

Mix the iron solution with 8 pints of the water and precipitate the oxide of iron therefrom by means of the water of ammonia, previously diluted with the remaining 4 pints of water, care being taken to have a slight excess of ammonia. Collect the precipitate upon a close cotton (drilling) strainer of ample proportions, well secured around the ends. Wash the precipitate with plenty of distilled water of a temperature not exceeding 50° Fahr., stirring the magma constantly with a horn or wooden spatula while pouring the water upon it. Set the magma aside to drain for several hours, and then without expressing, or, if too moist after application of very slight and gradual pressure, transfer to a wide-mouthed bottle and add 4 fluid ounces of solution of chloride of iron; shake briskly for a while, and then set aside in a cool place for twenty-four hours, or until a complete solution has been effected, meanwhile stirring the mixture frequently. Finally, transfer the solution to a dialyser and proceed in the usual manner. The process requires from eight to twelve days for completion. The preparation may be considered finished when tincture of nutgalls produces no darkening colour, and nitrate of silver no precipitate in the diluted solution.

When time is no object successive portions of oxide of iron may be dissolved in the solution already obtained in the same manner as the first portion, thus shortening the process of dialysing; or, in fact, carrying the saturation when the latter becomes altogether unnecessary, since the resulting preparation possesses precisely the same physical and chemical properties and peculiarities as the dialysed liquid.

HALL'S SOLUTION OF STRYCHNIA.

Strychnia (in crystals)	16	grains.
Alcohol	7	ounces.
Water	7	,,
Acetic Acid	½	,,
Tinct. Cardamom Comp.	1½	,,

Rub the strychnia to a very fine powder, and dissolve with the acetic acid. Add the alcohol, water, and prepared flavouring previously mixed, and filter.

Each fluid ounce contains 1 grain of strychnia.

SOLUTION OF MORPHIA.

Sulphate of Morphia . .	16	grains.
Water	1	ounce.

Dissolve.

This must not be used in place of the officinal liquor or solution of morphia. See below.

SOLUTION OF MORPHIA (OFFICINAL).

Sulphate of Morphia	8	grains.
Distilled Water	½	pint.

One fluid drachm contains ⅛ grain of morphia.

SOLUTION OF PHOSPHORUS, BROMINE, AND IODINE.

Phosphorus	10	grains.
Bromide	170	,,
Iodine	170	,,
Alcohol	1	ounce.
Glycerine, enough to make . .	8	fl. ounces.

Dissolve the iodine in the alcohol and add to the glycerine; then add the bromine, and, lastly, the phosphorus, very gradually, in fine shavings, to the mixture. Great care must be taken in adding the phosphorus, as the action is violent.

SOLUTION OF BROMHYDRIC ACID.

(*Hydrobromic Acid.*)

Bromide of Potassium .	1	ounce.
Tartaric Acid	1⅓	,,
Water	4	,,

Mix and agitate until the salts are dissolved and precipitation commences. Set aside in a cold place for twelve hours, decant and filter.

WINES AND BITTERS.

TO PREPARE CIDER FOR MAKING THE VARIOUS KINDS OF ARTIFICIAL DRINKS.

Pure Cider	40	gallons.
Alcohol	1	,,
Loaf Sugar	4	pounds.
Crude Tartar	8	ounces.

Fill into a cask and mix the ingredients thoroughly, and as fermentation takes place, keep the cask full up with fresh cider in order to work off all the dregs. To check fermentation, add ½ pound of mustard seed to each 40 gallons.

BLACKBERRY WINE.

Ripe Berries	20	gallons.
Hot Water	5	,,
Sugar	40	pounds.
Ginger (bruised)	2	ounces.
Red Tartar	8	,,
Alcohol	1	gallon.

Bruise the berries and pour on three gallons of hot water; infuse three days, and subject to pressure in a canvas bag. Macerate the dregs for twelve hours in the remaining water, and press again; mix the two liquors together, add the sugar, and after fermentation, the ginger, the tartar, and mix well.

BLACK CURRANT WINE.

Black Currants	20	gallons.
Cold Water	20	,,
Sugar	60	pounds.
Red Tartar	8	ounces.
Cloves	½	,,
Orange Peel	½	,,
Ginger	½	,,

Proceed as with the Blackberry Wine.

CHERRY WINE.

Bruised Cherries	10 gallons.
Water	10 ,,
Sugar	22 pounds.
Cherry Stones (bruised)	2 ,,
Honey	5 ,,
Alcohol	1 gallon.
Red Tartar	6 ounces.
Cardamoms	1 ,,

Follow the process given for Blackberry Wine.

GINGER WINE.

Alcohol	1 quart.
Pulverised Capsicum	30 grains.
Best Ginger (bruised)	3 ounces.
Tartaric Acid	3 drachms.

Let stand for one week, then add—

Water	1 gallon.
Sugar (crushed)	1 pound.

Boil the sugar with the water for some time before adding to the other mixture; colour with cochineal colouring.

GINGER BEER.

White Sugar	20 pounds.
Lemon Juice	8 fl. ounces.
Honey	1 pound.
Bruised Ginger	17 ounces.
Water	18 gallons.

Boil the ginger in 3 gallons of water for half an hour, then add the lemon juice, sugar, and honey, with the remaining water, and strain; when cold add the white of an egg, together with ½ ounce of essence of lemon. After standing four days, bottle.

CLARET WINE.

Prepared Cider	40 gallons.
Water	5 ,,
The Juice of	40 lemons.
Sugar	12 pounds.
Cream of Tartar	4 ounces.
Pure Spirits	3 gallons.

Let stand for ten days, and then colour with red saunders; after this, fine it.

MEAD.

Honey	20 pounds.
Cider	12 gallons.
Rum	4 pints.
Brandy	4 ,,
Red or White Tartar	6 ounces.
Bitter Almonds	2 drachms.
Cloves	2 ,,
Yeast	1 pint.

Dissolve the honey in the cider, add the yeast, and let it ferment. When clear, add the other ingredients, macerate three days, strain and bottle.

EXTRACT ROOT BEER.

Extract of American Sarsaparilla	10 drachms.
Fluid Extract of Prince's Pine	10 ,,
Fluid Extract of Wintergreen	4 ,,
Fluid Extract of Licorice	2 ,,
Root Beer Flavouring	1 ounce.
Refined Molasses	1 gallon.
Water	9 ,,

Mix. Charge in an ordinary soda fountain in the usual manner.

CHERRY BRANDY.

Alcohol	40 gallons.
Water	4 ,,
Cherries (bruised)	40 quarts.
Sugar	10 pounds.
Bitter Almonds (bruised)	1 ,,
Cloves	2 ounces.
Cassia	1 ,,

Macerate for one month, and then draw off and decant or filter. Colour this with burnt sugar.

MANHATTAN SPRUCE BEER POWDER.

Powdered Refined Sugar	16½ ounces
Powdered Bicarbonate of Soda	3½ ,,
Powdered Citric Acid	4 ,,
Conct. Essence of Spruce	1 ,,

Mixed and used as before.

METHEGLIN.

Honey	112 pounds.
Water	24 gallons.

Mix in a cask, and stir daily until dissolved; then add

Yeast	1 pint.
Hops	1 pound.

Boil the hops in a gallon of water, mix the whole, add as much more water as will make in all one barrel full. Ferment.

CURRANT WINE.

White Currant Juice	1 quart.
Warm Water	4 ,,
Brown Sugar	2 pounds.
Alcohol	½ pint.
Tincture of Kino	½ drachm.

Let stand for a week or two, then rack off and bottle.

MULBERRY WINE.

Ripe Mulberries	10 gallons.
Apples	10 ,,
Sugar	20 pounds.
Catechu	8 ounces.
Red Tartar	8 ,,

Express the juice, put it into a cask, add the sugar and ferment with yeast if necessary; then add the othe ingredients.

PORT WINE—IMITATION.

Prepared Cider	35	gallons.
Red Cape Wine	5	,,
Genuine Port Wine	5	,,
Alcohol	3	,,
Sugar	15	pounds.
Tincture Kino	2	ounces.
Tartaric Acid	1	,,

Put this first into a tight cask for one week, then draw off and colour with sugar colouring.

PORT WINE, No. 2.

Prepared Cider	40	gallons.
Alcohol	5	,,
Wild Grapes	10	quarts.
Rhatany Bark (bruised)	1	pound.
Loaf Sugar	13	,,
Tinct. Kino	4	ounces.

Follow the instructions as given for blackberry wine as regards the grapes, that is, subject them to pressure in a canvas bag; when the juice is all pressed out, mix with the other ingredients and let stand ten days, then draw off.

RASPBERRY WINE.

Spirits (Proof)	30	gallons.
Water	5	,,
Sugar	4	pounds.
One Pineapple (sliced)		
Raspberries	40	quarts.
Tinct. Kino	2	ounces.
Yeast	½	pint.
Tartaric Acid	2	ounces.

Let this stand in a warm place until fermentation takes place, then draw off and fine it.

BITTERS.

Bitters are considered as tonic and stomachic, and to improve the appetite when taken in moderation.

The best time is early in the morning, or an hour before meals. An excessive use of bitters tends to weaken the stomach. They should not be taken for a longer period than a few days at a time; but allow a period to elapse before again having recourse to them.

FRENCH COGNAC BITTERS.

Red Peruvian Bark	1½	pound.
Calisaya Bark	1½	,,
Bitter Orange Peel	1½	,,
Sweet Orange Peel	1½	,,
Calamus Root	2	ounces.
Cardamoms	4	,,
Cinnamon	1½	,,
Cloves	1½	,,
Nutmeg	1½	,,
Caraway	4	,,
Wild Cherry Bark	3	pounds.

Powder the drugs and steep for fifteen days in 45 gallons of proof spirits. Stir occasionally; then rack off and mix sufficient caramel to make it a dark red.

STOUGHTON BITTERS.

Orange Peel	12	parts.
Gentian	16	,,
Virginia Snake Root	3	,,
American Saffron	1	,,
Red Saunders	1	,,
Alcohol	104	,,
Water	56	,,

Mix by either percolation or maceration.

PERUVIAN BITTERS.

Peruvian Bark	8	parts.
Orange Peel	8	,,
Cinnamom	¼	,,
Cloves	¼	,,
Nutmegs	¼	,,
Cayenne	¼	,,
Alcohol	492	,,
Water	492	,,

Mix by either maceration or percolation.

TONIC BITTERS.

Cardamom	4	parts.
Nutmeg	1	,,
Cinnamon	4	,,
Cloves	2	,,
Ginger	2	,,
Orange Peel	1	,,
Alcohol	278	,,
Water	278	,,
Sugar	72	,,

Mix by either maceration or percolation.

ANGOSTURA BITTERS.

Gentian	4	parts.
Calisaya Bark	10	,,
Canada Snake Root	10	,,
Virginia Snake Root	10	,,
Licorice Root	10	,,
Dandelion Root	10	,,
Pimento Root	10	,,
Angostura Bark	10	,,
Cardamom	4	,,
Rhubarb	4	,,
Galangal	4	,,
Orange Peel	16	,,
Caraway Seed	2	,,
Cinnamon	2	,,
Nutmegs	2	,,
Cloves	½	,,
Coriander	2	,,
Catechu	2	,,
Wormwood	2	,,
Mace	1	,,
Red Saunders	12	,,
Curcuma	8	,,
Alcohol 65 per cent.	1450	,,
Honey	480	,,

In the above formulæ either maceration or percolation may be employed.

WILD CHERRY BITTERS.

Wild Cherry Bark	4	parts.
Partridge Berry (Mitchella repens)	1	"
Juniper Berries	½	"
Prickly Ash	¼	"
Exhaust with Water	40	"

And after filtering add—

Sugar	8	"
Alcohol	6	"

CLIFFORD'S BITTERS.

Gentian	24	parts.
Orange Peel	16	"
Cardamom	8	"
Cinnamon	1	"
Cochineal	1	"
Brandy	140	"
Water	984	"

GERMAN BITTERS.

Chamomile	2	parts.
Sweet Flag	6	"
Orris Root	8	"
Coriander	3	"
Centuary	1	"
Orange Peel	3	"
Alcohol	588	"
Water	672	"
Sugar	24	"

HOP BITTERS.

Orange Peel	2	parts.
Sweet Flag	1	"
Pimpinella Root	1	"
Hops	½	"
Alcohol	320	"
Water	320	"
Sugar	20	"

When otherwise completed this should be coloured with burnt sugar.

HAMBURG BITTERS.

Agaric	2	parts.
Cinnamon	5	"
Cassia	4	"
Grains Paradise	½	"
Quassia	3	"
Cardamom	1	"
Gentian	3	"
Orange Peel	3	"
Alcohol	556	"
Water	684	"
Acetic Ether	2	"

Mix by either maceration or percolation.

ORANGE BITTERS.

Orange Peel (grd.)	6	parts.
Water	36	"
Alcohol	38	"
Sugar	16	"

Mix by either maceration or percolation.

SPICED BITTERS.

Poplar Bark (bruised)	10	ounce.
Pulv. Bayberry	2	"
Pulv. Balmony	2	"
Pulv. Golden Seal	1	"
Pulv. Cloves	1	"
Pulv. Cayenne Pepper	½	"
Pulv. Sugar	3	"
Water	20	"
Alcohol	28	"

Mix by either maceration or percolation; if by maceration, about the eighth day, add 6 ounces of the best brandy, and if by percolation, add the brandy when through percolating.

SMITH'S STOMACH BITTERS.

Pulv. Gentian Root	1½	ounce.
Pulv. Orange Peel	2½	"
Pulv. Cinnamon	¼	"
Pulv. Anise Seed	4	drachms.
Pulv. Coriander Seed	4	"
Pulv. Cardamom Seed	1	"
Peruvian Bark (coarse)	4	"
Gum Kino	2	"
Best Alcohol	1	pint.

Macerate for one week, and add 1 pound of loaf sugar, together with 1 quart of hot water, then filter.

WINE BITTERS.

Cinchona Bark (crushed)	4	ounces.
Gentian Root (crushed)	2	"
Juniper Berries (crushed)	1	"
Orange Peel (crushed)	1	"
California Port Wine	4	pints.
Alcohol	1	"
Water	3	"

Mix. Digest for one week; then filter, adding enough wine to complete one gallon.

Dose.—One-half to two tablespoonfuls, for debility and loss of appetite.

TINCTURES.

Tinctures are spirituous solutions of vegetable, animal, and some saline substances. They are made either with pure alcohol or with proof spirit. The first kind are precipitated by the addition of water, and therefore are more seldom employed, but the latter are very common additions to infusions and decoctions. They ought not to be united with any vehicle that can decompose the tinctures or separate anything from it in a palpable form.

Tinctures should be kept in close bottles, for although they are not liable to spoil, yet, by the evaporation of the menstruum, their strength is altered, which, if they contain opium or other active matters, may be productive of bad effects.

Care must be taken that the substances treated are exhausted by their soluble principles, and your aim must be to produce a perfectly clear liquid.

DEODORISED TINCTURE OF OPIUM.

Opium (in moderately fine powder) .	2½ ounces.
Ether and Alcohol, each . . .	½ pint.
Water, a sufficient quantity.	

Macerate the opium with ½ pint of water for twenty-four hours; express, repeat the operation twice with the same quantity of water. The foregoing preparations of opium have all an anodyne operation, and are found useful in a vast number of conditions. It is principally used to allay pain, relax spasms, and procure sleep. Temporary lock-jaw is said to yield to its external application.

Dose.—Ten to 30 drops.

Incompatibles.—Liquor, ammonia, potass., carbonate potass., soda, metallic salts, astringent vegetable infusions and decoctions.

COMPOUND SPIRITS OF LAVENDER.

Oil of Lavender . . .	1 fl. drachm.
Oil of Rosemary . . .	2 " "
Cinnamon (in moderately fine powder)	2 troy ounces.
Cloves (in moderately fine powder)	½ " "
Nutmeg (in moderately fine powder)	1 " "
Red Saunders (in moderately fine powder) . . .	360 grains.
Alcohol	6 pints.
Water	2 "
Diluted Alcohol, a sufficient quantity.	

Dissolve the oils in the alcohol, and add the water; then mix the powders, and having moistened the mixture with a fluid ounce of the alcoholic solution of the oils, pack it firmly in a conical percolator, and gradually pour upon it the remainder of the alcoholic solution, and afterwards diluted alcohol until the filtered liquid measures 8 pints.

Use.—In fainting and chronic debility.

Dose.—Twenty to 60 drops.

COMPOUND TINCTURE OF QUINOIDIA.

Quinoidia	10 scruples.
Aromatic Tincture	10 "
Muriatic Acid	5 "
Diluted Alcohol	100 "
Oil of Cinnamon	6 drops.

Dissolve the acid and the alkaloid in the alcohol, and mix.

Dose.—Teaspoonful, two or three times a day.

Useful in intermittent and remittent fevers, and whenever tonics are indicated.

TINCTURE OF ERGOT.

Ergot of Rye (in coarse powder) .	8 ounces.
Diluted Alcohol, q. s.	

Macerate for fourteen days, and strain.

Properties.—Stimulant, acting chiefly on the muscular system of the uterus.

Use.—In parturition, leucorrhœa, and uterine hemorrhage, hemorrhage from the stomach, etc.

TINCTURE OF IODINE (COMP.)

Iodine	1 drachm.
Iodide of Potassium	2 ounces.
Alcohol	2 pints.

Dissolve the iodine, and filter. Preserve the mixture in a closely-stoppered vessel.

Properties.—Stimulant, absorbent, emmenagogue, alterative.

Use.—In scrofula, bronchocele, and chlorosis.

Dose.—Ten to 30 drops.

TINCTURE OF LOBELIA (COMP.).

Lobelia	1 ounce.
Blood Root	1 "
Skunk Cabbage	1 "
Wild Ginger	1 "
Pleurisy Root	1 "
Water or Vinegar	1 pint.

Coarsely powder the roots. Macerate for fourteen days; express and filter.

Properties.—Emetic, diuretic, expectorant.

Use.—In spasmodic asthma.

Dose.—Twenty to 60 drops.

TINCTURE OF OPIUM.

(*New Method.*)

Opium	3 ounces.
Hot Water	1 pint.
Alcohol	1 "

Slice the opium, and work it in the hot water until, thoroughly separated and dissolved, then add alcohol, and filter after it has stood a short time. Each nineteen drops will represent one grain of opium. For its incompatibilities, see Deodorised Tinc. of Opium.

Properties.—Anodyne.

Use.—To allay pain, relax spasm, and procure sleep.

TINCTURE OF OPIUM (CAMPHORATED).

(*Paregoric.*)

Opium Dried (moderately fine powder)	60 grains.
Benzoic Acid	60 ,,
Camphor	40 ,,
Oil of Anise	1 fl. drachm.
Clarified Honey	2 ounces.
Diluted Alcohol	2 pints.

Mix the ingredients in a suitable vessel, and macerate for seven days, and strain.

Properties.—Anodyne.

Use.—Chronic asthma, whooping-cough, and in cases where quiet, rather than sleep, is required.

Dose.—For children, 5 to 20 drops; for adults, 1 to 3 teaspoonfuls.

TINCTURE OF OPIUM (ACETATED).

Opium Dried (moderately fine powd.)	2 ounces.
Distilled Vinegar	12 ,,
Alcohol	½ pint.

Rub the opium with the distilled vinegar, then add the alcohol and macerate for seven days and strain.

TINCTURE OF ASSAFŒTIDA (COMPOUND).

Assafœtida	1 ounce.
Lupulin	1 ,,
Stramonium Seed (bruised)	1 ,,
Valerian Root (in powder)	1 ,,
Alcohol	3 pints.

Macerate for fourteen days and filter.

Properties.—Antispasmodic, expectorant, anthelmintic. Useful in hysteria, tympanitis, asthma, etc.

Dose.—One teaspoonful.

TINCTURE OF BENZOIN (COMPOUND).

Benzoin (in coarse powder)	3 ounces.
Socotrine Aloes (coarse powder)	½ ,,
Storax	2 ,,
Balsam Tolu	1 ,,
Alcohol	2 pints.

Macerate for seven days and filter.

Properties.—Stimulant, expectorant, antispasmodic.

Use.—In old asthma cases, chronic catarrh, etc.

TINCTURE CINCHONA (COMPOUND).

Red Cinchona (moderately fine powd.)	4 ounces.
Bitter Orange Peel ,, ,, ,,	3 ,,
Serpentaria	360 grains.
Saffron	120 ,,
Red Saunders	120 ,,
Alcohol and Water, each q. s.	

Mix 3 measures of alcohol with 1 of water; mix the powders, and moisten them with 4 fluid ounces of the menstruum, and percolate till 2½ pints of tincture are obtained.

Properties.—Tonic, antiperiodic, diaphoretic.

Use.—Same as the Bark. It is incompatible with acids, acidulous, earthy and metallic salts.

TINCTURE OF RHUBARB AND CARDAMOM.

Rhubarb (moderately coarse powder)	6 ounces.
Cardamom (moderately fine powder)	1 ,,
Diluted Alcohol, sufficient to make	50 ,,

To be prepared by percolation.

Properties.—Stomachic and purgative.

Use.—Exhibited in dyspepsia, debility of the intestines, etc. It is a useful adjunct where calomel is administered.

Dose.—One teaspoonful.

TINCTURE OF IODOFORM (COMPOUND).

Iodoform	15 grains.
Potass. Iodide	2 drachms.
Glycerine	2 ,,
Strong Alcohol	6 ,,

Rub up the iodoform and iodide of potassium, then add the glycerine, and rub it up to the consistence of thin cream; then add the alcohol and stir briskly.

Properties.—Alterative.

Use.—In syphilis and blood diseases, in glandular tumours and spermatorrhœa.

TINCTURE OF THE ACETATE OF COPPER.

Crystallised Acetate of Copper	1 drachm.
Distilled Water	10 ,,
Alcohol	1 ounce.

Dissolve the acetate in the water previously warmed, then add the alcohol and filter.

Properties.—Tonic, stimulant and escharotic.

Useful in epilepsy, chorea and other spasmodic affections.

Dose.—Five drops in water.

TINCTURE OF CINNAMON (COMPOUND).

Cinnamon (bruised)	1 ounce.
Cardamoms	3 drachms.
Prickly Ash Berries	3 ,,
Ginger	3 ,,
Diluted Alcohol	2 pints.

Macerate for fourteen days, express and filter.

Properties.—Astringent, stomachic.

Use.—In chronic diarrhœa and dysentery, etc.

Dose.—A teaspoonful.

TINCTURE OF COLCHICUM (COMPOUND).

Colchicum Seeds	2½ ounces.
Aromatic Spirits of Ammonia	1 pint.

Macerate for fourteen days, and strain.

Properties.—Narcotic, diuretic, cathartic.

Use.—In dropsy, gout, rheumatism, neuralgia.

Dose.—Ten drops to one teaspoonful in water.

TINCTURE OF CAMPHOR.

Camphor	5 ounces.
Alcohol	2 pints.

Mix, that the camphor may be dissolved.

Properties.—Anodyne, narcotic, diaphoretic, sedative.

Use.—A useful topical application in rheumatism and other pains, typhus, cynanche maligna, and as an adjunct to barks and opium in checking gangrene.

TINCTURE OF CASTOR (COMPOUND).

Castor (bruised)	1 ounce.
Assafœtida	4 drachms.
Aromatic Spirits of Ammonia	1 pint.

Digest for seven days and strain.

Properties.—Antispasmodic, emmenagogue.

Use.—In hysteria, cramp of the stomach and flatulent colic, amenorrhœa, typhus, etc.

Dose.—One or two teaspoonfuls in water.

TINCTURE OF BLUE COHOSH (COMPOUND).

Blue Cohosh (in powder)	2 ounces
Ergot	1 ,,
Water Pepper (bruised)	1 ,,
Oil of Savin	½ fl. ,,
Alcohol	1½ pint.

Macerate for fourteen days, express and strain.

Properties.—Tonic, diuretic, diaphoretic, expectorant, emmenagogue.

Use.—Rheumatism, dropsy, chorea, hysteria and pulmonary affections.

Mix the powder with 2 fluid ounces of diluted alcohol and proceed as in Tincture of Arnica.

TINCTURE OF CINCHONA.

Yellow Cinchona (in moderately fine powder)	6 troy ounces.
Diluted Alcohol, q. s.	

Properties.—Strongly and permanently tonic and anti-periodic, slightly astringent, stomachic, and febrifuge.

Use.—In intermittent and continued fevers, confluent small-pox, erysipelas, acute rheumatism, cynanche maligna, scarlatina, and in every disease attended with deficient action.

Dose.—One to three drachms.

TINCTURE OF CINCHONA (COMPOUND).

Red Cinchona (in moderately fine powder)	4 troy ounces.
Bitter Orange Peel (in moderately fine powder)	3 ,, ,,
Serpentaria	360 grains.
Saffron (moderately coarse powder)	120 ,,
Red Saunders (in moderately fine powder)	120 ,,
Diluted Alcohol, q. s.	

Mix the powders, and having moistened the mixture with 4 fluid ounces of diluted alcohol, proceed as in Tincture of Arnica, until 2½ pints of tincture are obtained.

Properties.—Tonic, anti-periodic, diaphoretic.

Use.—The same as the simple tincture, but it is more grateful, and therefore more frequently used.

Dose.—One to three drachms.

TINCTURE OF CASTOR.

Castor (bruised)	2 troy ounces.
Alcohol	2 pints.

Macerate for seven days, express and filter through paper.

Properties.—Tonic, anti-spasmodic, emmenagogue.

Use.—In hysteria, cramp of the stomach, neuroses, and spasmodic affections.

Dose.—Twenty drops to two drachms.

TINCTURE OF CATECHU

Catechu (in moderately coarse powder)	3 troy ounces.
Cinnamon	2 ,, ,,
Diluted Alcohol, q. s.	

Macerate for seven days, or proceed as in Tincture of Arnica.

Properties.—Astringent and tonic.

Use.—In chronic dysentery and diarrhœa from a relaxed state of the bowels; in uterine hemorrhages, ulceration of the gums, and in coughs and hoarseness.

Dose.—One or two teaspoonfuls in wine or some bitter infusion.

TINCTURE OF COLCHICUM.

Colchicum Seed (in moderately fine powder)	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 1 ounce of the diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—Narcotic, diuretic, cathartic.

Use.—In dropsy, gout, rheumatism, neuralgia, bronchitis, and scarlet fever, combined with magnesia in small doses.

Dose.—Ten drops to one drachm.

TINCTURE OF CONIUM.

Conium (in moderately fine powder)	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 2 fluid ounces of diluted alcohol, and proceed as in Tincture of Scilla.

Properties.—Narcotic, poisonous in an overdose; resolvent.

Use.—In cancer, and scirrhous, scrofulous and syphilitic ulcerations and swellings; pertussis, chronic enlargement of the liver; asthma and neuralgic affections.

Dose.—Thirty drops to one drachm.

TINCTURE OF LOBELIA.

Lobelia (in fine powder) . .	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 2 fluid ounces of diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—Emetic, diuretic, expectorant, anti-spasmodic, purgative.

Use.—In paroxysms of asthma; in croup and whooping cough.

TINCTURE OF LUPULIN.

Lupulin	4 troy ounces.
Alcohol, q. s.	

Pack the lupulin in a narrow cylindrical percolator, and gradually pour alcohol upon it until 2 pints of tincture are obtained.

Properties.—Tonic and sedative, hypnotic and febrifuge.

Use.—In gout, rheumatism, delirium tremens.

Dose.—One to three drachms.

TINCTURE OF HYOSCYAMUS.

Henbane Leaf (fine powder) .	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 2 fluid ounces of diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—Narcotic, anodyne, anti-spasmodic, and slightly stimulant.

Use.—In epilepsy, hysteria, palpitation, palsy, mania, and scirrhus, and as a substitute for opium to procure sleep in nervous habits, pertussis, asthma, catarrh, gout, rheumatism.

Dose.—One-half to two drachms.

TINCTURE OF JALAP.

Jalap (in fine powder) . .	6 troy ounces.
Alcohol, q. s.	
Water, q. s.	

Mix 2 measures of alcohol with 1 of water, and proceed as in Tincture of Aconite Leaves.

Properties.—Cathartic.

Use.—In costiveness, mania, worms, and as a hydragogue in dropsy. It is given to quicken the operation of calomel and other slow purgatives. A drop of essential oil will prevent its griping.

TINCTURE OF QUASSIA.

Quassia (in moderately fine powder)	2 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with a fluid ounce of diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—Stimulant and tonic.

Use.—As an adjunct to stomachic infusions, or taken diluted with water in dyspepsia and other cases of debility.

Dose.—One to two drachms.

TINCTURE OF RHUBARB.

Rhubarb (in moderately fine powder)	3 troy ounces.
Cardamoms	½ ,, ,,
Diluted Alcohol, q. s.	

Mix the powders, and, having moistened them with 1 ounce of diluted alcohol, proceed as in Tincture of Aconite Leaves.

Properties.—Cathartic, astringent and tonic.

Use.—In costiveness, and in combination with calomel, and a useful adjunct to neutral salts. It is much used as a laxative for infants.

TINCTURE OF RHUBARB AND SENNA.

Rhubarb (in moderately coarse powder)	1 troy ounce.
Senna (in moderately coarse powder)	120 grains.
Red Saunders	120 ,,
Coriander Seeds . . .	60 ,,
Fennel	60 ,,
Licorice	30 ,,
Saffron	30 ,,
Raisins (without seeds) . .	6 troy ounces.
Diluted Alcohol	3 pints.

Macerate for fourteen days, and filter.

Properties.—Stomachic and purgative.

Use.—In dyspepsia, debility of the intestines, flatulent colic, diarrhœa, and the costiveness of old people.

TINCTURE OF SANGUINARIA.

Blood Root (in moderately fine powder)	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with a fluid ounce of diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—An acid emetic, stimulant and narcotic.

Use.—In bronchitis, laryngitis, whooping cough, dysentery. It excites the energies of a torpid liver.

Dose.—Ten drops to one drachm.

TINCTURE OF VALERIAN.

Valerian (in moderately fine powder)	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 1 fluid ounce of diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—Stimulant, anti-spasmodic. It excites the cerebro-spinal system.

Use.—In hysteria, epilepsy, hemicrania, chlorosis, and all nervous and spasmodic affections.

Dose.—One to two drachms.

TINCTURE OF VALERIAN (AMMONIATED).

Valerian (in moderately fine powder)	4 troy ounces.
Aromatic Spirits of Ammonia .	2 pints.

Macerate for seven days, and filter.

Properties.—Stimulant, anti-spasmodic.

Use.—The same as for the former, but, on account of the ammonia, this is more useful in hysteria.

TINCTURE OF BLACK HAW.

Black Haw (in coarse powder)	3 troy ounces.
Diluted Alcohol	1 pint.

Exhaust by maceration or displacement, so as to obtain 1 pint of tincture.

Properties and Uses.—It is recommended as having a special tonic action on the uterus and preventing abortion.

Dose.—A teaspoonful, four or five times a day.

COMPOUND TINCTURE OF SERPENTARIA.

Virginia Snake Root	2 ounces.
Ipecac.	2 ,,
Saffron	2 ,,
Camphor	2 ,,
Opium	2 ,,
Gin or Diluted Alcohol	6 pints.

Exhaust by maceration or percolation. This preparation is called sudorific tincture by Eclectics.

Properties.—It is stimulant, diaphoretic and diuretic.

Use.—United with infusions of cinchona in typhoid and putrid fevers, in gout and periodic headaches.

TINCTURE OF BUCHU.

Buchu Leaves (in moderately fine powder)	3 ounces.
Alcohol	1 pint.

Exhaust by maceration or percolation.

Dose.—A teaspoonful.

Use.—In rheumatism, gout and affections of the bladder.

Properties.—Sudorific and diuretic.

TINCTURE OF ERYTHROXYLON.

Coca (in moderately fine powder)	1 part.
Alcohol, sufficient to make	5 parts.

Exhaust by percolation.

Properties.—Antispasmodic, calmative, astringent.

Useful in nervous debility, spermatorrhœa.

Dose.—One drachm.

TINCTURE OF EUCALYPTUS.

Eucalyptus (in moderately fine powd.)	1 ounce.
Alcohol	5 ,,

Exhaust by percolation.

Useful in intermittent fevers.

Dose.—A teaspoonful.

TINCTURE GRINDELIA ROBUSTA.

Grindelia (in coarse powder)	1 ounce.
Alcohol	5 ,,

Exhaust by percolation.

Useful for asthma, also as an antidote to effects of poison-oak.

TINCTURE OF IODINE.

Iodine	1 ounce.
Alcohol	10 ,,

Mix.

Properties.—It is stimulant, absorbent, alterative.

Useful in glandular swellings, scrofula, dropsy, cutaneous diseases.

Dose.—Five or six drops in water.

MURIATED TINCTURE OF OPIUM.

Powdered Opium	1 ounce.
Muriatic Acid	1 fl. ounce
Distilled Water	15 ,, ,,

Macerate for fourteen days, then filter and add sufficient water through the filter to make the preparation measure a pint when completed.

Properties.—Anodyne, antispasmodic.

Use.—May be used with advantage in typhoid fever, and fevers generally.

TINCTURE OF PLEURISY ROOT.

(*Asclepias Tuberosa.*)

Pleurisy Root	3 ounces.
Alcohol	1 pint.

Exhaust by maceration or percolation.

Properties.—Diaphoretic, expectorant, cathartic.

Use.—Used extensively in pneumonia, remittents and dysentery.

Dose.—One teaspoonful two or three times a day.

ACETIC TINCTURE OF BLOOD ROOT.

Blood Root (finely powdered)	2 ounces.
Lobelia	2 ,,
Skunk Cabbage	2 ,,
Distilled Vinegar	2 pints.
Alcohol	2 ounces.

Properties.—An acid emetic, stimulant, narcotic, diaphoretic.

Use.—Chronic catarrh, whooping cough, and bronchial affections.

Make 2 pints of tincture by maceration or percolation with the vinegar, and add the alcohol.

Used by eclectic physicians principally.

Dose.—Ten to sixty drops.

DOVER'S TINCTURE.

Pulv. Opium	8 grains.
Pulv. Ipecac	8 ,,
Diluted Alcohol, sufficient.	

Exhaust the powders by percolation in the usual manner, so as to obtain 1 fluid ounce of percolate. Each fluid drachm of the percolate will be equivalent to 10 grains of Dover's powder.

TINCTURE OF ALOES AND CANELLA.

(*Tincture of Hiera Pieva.*)

Powdered Aloes and Canella	12 drachms.
Brandy	1 pint.

Macerate ten days and filter.

Dose.—A teaspoonful.

Properties and Uses.—Similar to aloes, which see.

TINCTURE OF IODINE.

Resublimed Iodine	5 ounces.
Iodide of Potassium	1 ,,
Alcohol	24 ,,
Water	4 ,,

Properties.—Stimulant, absorbent, alterative.

Use.—In glandular swellings, dropsy, secondary syphilis, rheumatism, gout, hepatitis. It is about two and a half times as strong as the officinal tincture.

Dose.—Five to ten drops.

TINCTURE OF MYRRH.

(*U. S. L. E. D.*)

Myrrh (in moderately coarse powder)	3 troy ounces.
Alcohol, q. s.	

Introduce the powder into a conical percolator, press it moderately, and gradually pour alcohol upon it until 2 pints of tincture are obtained.

Operation.—Tonic, deobstruant and antiseptic.

Use.—In chronic catarrh, phthisis and pulmonary complaints generally.

Dose.—Thirty to sixty drops.

TINCTURE OF NUX VOMICA.

Nux Vomica (in fine powder)	2 troy ounces.
Diluted Alcohol, q. s.	

Mix the powder with a pint of alcohol, and digest for twenty-four hours in a close vessel, with a gentle heat, then transfer the mixture to a cylindrical percolator and gradually pour diluted alcohol upon it until two pints of tincture are obtained.

Operation.—Tonic, stimulant.

Use.—In dyspepsia, gout, rheumatism, and especially in paralysis of the lower limbs.

Dose.—Ten to twenty drops.

TINCTURE OF CANTHARIDES.

Cantharides (in fine powder)	1 troy ounce.
Diluted Alcohol, q. s.	

Moisten the powder with ½ fluid ounce of diluted alcohol, pack it in a conical percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Diuretic, stimulant, and narcotic.

Use.—In gleet and leucorrhœa, but chiefly used as an external application.

Dose.—Thirty to sixty drops.

TINCTURE OF CAPSICUM.

(*U. S. L. E. D.*)

Capsicum (in fine powder)	1 troy ounce
Diluted Alcohol, q. s.	

Proceed as for Tincture of Cantharides.

Properties.—Stimulant, rubefacient.

Use.—In the low stages of typhus fever, sore throat, gargles, etc.

TINCTURE OF CAPSICUM AND CANTHARIDES.

(*U. S.*)

Cantharides (in fine powder)	10 drachms.
Capsicum (in fine powder)	1 ,,
Diluted Alcohol	1 pint.

Mix, and digest for ten days, and filter, or proceed as in Tincture of Cantharides.

Properties.—Stimulant and rubefacient.

Use.—As a counter-irritant in deep-seated, painful affections.

TINCTURE OF COLUMBO.

(*U. S. D.*)

Columbo (in moderately fine powder)	4 ounces.
Diluted Alcohol, q. s.	

Moisten the powder with one ounce of diluted alcohol, and proceed as in Tincture of Arnica.

Properties.—Tonic, antiseptic.

Use.—In bilious vomiting, mesenteric fever of infants, in dyspepsia.

Dose.—Thirty drops to four drachms.

TINCTURE OF INDIAN HEMP.

Purified Ext. of Hemp	360 grains.
Alcohol	1 pint.

Dissolve the extract in the alcohol, and filter through paper.

Properties.—It is narcotic, anodyne, antispasmodic.

Use.—Employed in gout, neuralgia, lockjaw, convulsions, chorea, hysteria, etc.

Dose.—Forty drops is equal to 1 grain of the extract.

TINCTURE OF HYDRASTIS.

(*Golden Seal.*)

Hydrastis (in powder)	3 ounces.
Diluted Alcohol	1 pint.

Macerate for fourteen days, express and filter.

Properties.—It is a powerful tonic, exerting an especial influence on the mucous surfaces.

Use.—In dyspepsia, erysipelas, remittents and intermittents as well as typhoid fevers.

Dose.—One teaspoonful.

TINCTURE OF BELLADONNA.

Belladonna Leaves (recently dried, and in fine powder)	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 2 fluid ounces of diluted alcohol, and proceed as in Tincture of Aconite Leaves.

Properties.—Powerfully narcotic, diaphoretic, diuretic and repellent.

Use.—In obstinate intermittents, tic-douloureux, palsy, epilepsy, chorea, mania, gout, rheumatism dropsy, jaundice, night sweats, etc.

Dose.—Ten to thirty drops.

TINCTURE OF HYDRASTIS (COMPOUND).

Golden Seal Root (powdered)	2 ounces.
Lobelia Seed	2 ,,
Diluted Alcohol	1 pint.

Proceed as in Tincture of Aconite Leaves.

TINCTURE OF SHEEP LAUREL.

Sheep Laurel	3 ounces.
Alcohol	1 pint.

Macerate for fourteen days, express and filter.

Properties.—Sedative and somewhat astringent.

Use.—In syphilis, fevers, jaundice, neuralgia and inflammation.

Dose.—Ten to twenty drops.

TINCTURE OF ARNICA.

Arnica	6 troy ounces.
Alcohol	1½ pint.
Water	½ ,,
Diluted Alcohol, q. s.	

Mix the alcohol and water, and having moistened the arnica slightly with the mixture, bruise it thoroughly in a mortar, then pack it firmly in a cylindrical percolator, and pour upon it first the remainder of the mixture, and afterwards sufficient diluted alcohol to make the tincture 2 pints.

Properties and Uses.—It is used as a popular lotion in sprains and bruises, and sometimes internally in obstinate intermittents.

TINCTURE OF ASSAFŒTIDA.

(*U S. P. L. E. D.*)

Assafœtida (bruised)	4 troy ounces.
Alcohol	2 pints.

Macerate for fourteen days, and strain

Properties.—Antispasmodic, expectorant, anthelmintic.

Use.—In hysteria, tympanitis, asthma, dyspnœa.

Dose.—Thirty to sixty drops.

TINCTURE OF ALOES AND MYRRH.

(*L. D.*)

Socotrine Aloes (moderately fine powder)	3 ounces.
Myrrh	3 ,,
Saffron (moderately coarse powder)	1 ,,
Alcohol, q. s.	

Mix the powders, and having moistened the mixture with 2 fluid ounces of alcohol, pack it moderately in a conical percolator and gradually pour alcohol upon it, until 2 pints of tincture are obtained.

Properties.—Cathartic, stomachic, emmenagogue.

Use.—To open the bowels in languid, cold habits; in chlorosis.

Dose.—Two teaspoonfuls.

TINCTURE OF ALOES.

(*U. S. P. L. E. D.*)

Socotrine Aloes (fine powder)	1 troy ounce
Extract of Licorice	3 " "
Alcohol	½ pint.
Distilled Water	1½ ,,

Macerate for fourteen days; express and filter.

Properties.—Cathartic, stimulant.

Use.—It is anthelmintic, stomachic, and promotes digestion.

TINCTURE OF ACONITE LEAVES.

(*U. S. P.*)

Aconite Leaves (recently dried, and in fine powder)	4 troy ounces.
Diluted Alcohol, q. s.	

Moisten the powder with 2 fluid ounces of diluted alcohol; pack it firmly in a conical percolator, and gradually pour diluted alcohol upon it, until 2 pints of tincture are obtained.

Properties.—Excitant, revellent.

Use.—In fevers; externally in palsy, amaurosis, etc.

TINCTURE OF SCILLA.

Squill (moderately coarse powder)	4 ounces.
Alcohol Water } together	2 pints.

Mix 3 measures of alcohol with 1 of water; moisten the powder with a fluid ounce of the mixture; pack it in a conical percolator, and gradually pour the menstruum upon it, until 2 pints of tincture are obtained.

Properties.—Stimulant, expectorant.

Use.—Often employed in advanced stages of bronchial affections, after the subsidence of fever.

Dose.—Thirty to forty drops.

TINCTURE OF SERPENTARIA

Serpentaria (moderately fine powder)	4 ounces.
Diluted Alcohol, q. s.	

Proceed as for Tincture of Scilla.

Properties.—Tonic, stimulant, sudorific.

Use.—United with infusion of cinchona in typhoid and putrid fevers, gout and periodic headache.

TINCTURE OF ACONITE ROOT.

Aconite Root (in fine powder) .	12 troy ounces.
Alcohol, q. s.	

Moisten the powder with 6 fluid ounces of alcohol, pack in a conical percolator, and gradually pour alcohol upon it until 2 pints of tincture are obtained.

Properties and uses the same as for aconite leaves.

Dose.—Five to ten drops.

TINCTURE OF TAMARAC (COMPOUND).

(*Bone's Bitters.*)

Tamarac Bark	6	ounces.
Juniper Berries	6	"
Prickly Ash Berries . . .	4	"
Wild Cherry Bark	3	"
Seneca Snake Root	3	"
Tansy	1	"
Whisky	5	pints.
Molasses	1½	"
Hydro-Alcoholic Extract Mandrake .	1½	ounce.
Water, a sufficient quantity.		

Powder the barks and roots coarsely and mix; to this add 3 pints of the whisky. Let stand twenty hours, then place the whole in a vapour displacement apparatus, and force through the articles the steam or vapour of the additional whisky 2 pints, after which the stream of water sufficient to make the whole amount of tincture equal to 24 pints; to this add the molasses and the hydro-alcoholic extract of mandrake, which must be thoroughly dissolved.

TINCTURE TURKEY CORN.

Root of Turkey Corn (in powder) .	3 ounces.
Diluted Alcohol	1 pint.

Allow to stand 48 hours, and transfer to a percolator, or macerate for 14 days, and strain.

Properties.—Alterative and diuretic.

Use.—In syphilis and scrofula.

Dose.—Teaspoonful.

TINCTURE OF CARDAMOM.

Cardamom (in fine powder) . .	4 troy ounces.
Diluted Alcohol, in sufficient quantity.	

Moisten the powder with 2 fluid ounces of diluted alcohol, pack it firmly in a percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Carminative, stomachic.

Use.—In the flatulent colic of children, and to give warmth to other remedies.

Dose.—Sixty to one hundred and twenty drops.

TINCTURE CARDAMOM (COMP.).

Cardamom (in moderately fine powder)	360	grains.
Caraway (in moderately fine powder)	120	"
Cinnamon (in moderately fine powder)	300	"
Cochineal (in moderately fine powder)	60	"
Clarified Honey	2	ounces.
Diluted Alcohol, a sufficient quantity.		

Mix the powders, and having moistened the mixture with ½ fluid ounce of diluted alcohol, pack it in a cylindrical percolator and gradually pour diluted alcohol upon it until 2 pints and 6 fluid ounces of tincture are obtained; lastly, mix this with the clarified honey, and filter.

Properties.—Carminative, stomachic.

Use.—To give warmth to other remedies, and as an elegant adjunct to stomachic infusions, and to jalaps a good corrective to griping or cold purgatives.

Dose.—One to two drachms.

TINCTURE OF CINNAMON.

Cinnamon (in fine powder) . .	3 troy ounces.
Alcohol and Water, each a sufficient quantity.	

Mix alcohol and water in the proportion of two measures of the former to one of the latter; then moisten the powder with a fluid ounce of the mixture, pack it moderately in a conical percolator, and gradually pour the mixture upon it until 2 pints of filtered liquid are obtained.

Properties.—Stimulant, astringent, tonic, carminative.

Use.—As a grateful aromatic in dyspepsia and diarrhœa to cover the taste of nauseous remedies, and with cathartics to prevent griping.

Dose.—One to four teaspoonfuls.

TINCTURE OF CUBEBS.

(*Tinctura Cubebæ.*)

Cubebs (in moderately fine powder)	4 troy ounces.
Diluted Alcohol, a sufficient quantity.	

Moisten the powder with a fluid ounce of diluted alcohol, pack it in a conical percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Stimulant, purgative, diuretic.

Use.—In gonorrhœa, gleet, leucorrhœa; as a carminative in disorders of the digestive organs.

Dose.—One to two drachms.

TINCTURE OF DIGITALIS.

(*Tinctura Digitalis.*)

Digitalis (recently dried and in fine powder)	4 ounces.
Diluted Alcohol, a sufficient quantity.	

Moisten the powder with 2 fluid ounces of diluted alcohol, pack it firmly in a conical percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Stimulant, but afterwards sedative; diuretic, narcotic; in over-doses it occasions vomiting, purging, vertigo, delirium, convulsions and death.

Use.—In inflammatory diseases, phthisis, dropsies, palpitation of the heart, and other kindred affections; in mania, epilepsy and asthma.

Dose.—Ten to twenty drops.

TINCTURE OF HELLEBORE.

(*Tinctura Hellebori.*)

Black Hellebore (in moderately fine powder) . . . . . . 4 ounces.
Diluted Alcohol, a sufficient quantity.

Moisten the powder with a fluid ounce of diluted alcohol, pack it in a cylindrical percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Alterative, emmenagogue, purgative, hydragogue.

Use.—In mania, melancholia, dropsy, suppression of the menses, in cutaneous eruptions.

Dose.—Thirty to sixty drops in water, twice a day.

TINCTURE OF HOPS.

(*Humulus.*)

Hops (in moderately fine powder) . 5 troy ounces.
Diluted Alcohol, a sufficient quantity.

Moisten the powder with 2 fluid ounces of diluted alcohol, pack it very firmly in a cylindrical percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Narcotic, anodyne, diuretic.

Use.—In gout and rheumatism.

Dose.—One to three drachms.

WARBURG'S TINCTURE.

Socotrine Aloes	120 grains.
Confection of Rose	30 ,,
E. I. Rhubarb	30 ,,
Angelica Seed	30 ,,
Elecampane Root	15 ,,
Saffron	15 ,,
Fennel Seed	15 ,,
Prepared Chalk	15 ,,
Gentian Root	8 ,,
Zedoary Root	8 ,,
Cubebs	8 ,,
Camphor	8 ,,
Sulph. Quinine	75 ,,

Diluted Alcohol, enough to make 1 pint.

Powder the drugs and percolate all except the confection of rose, prepared chalk and quinine, with the diluted alcohol until 1 pint is obtained. Rub the quinine with the confection of rose and dissolve in a portion of the percolate, previously heated; add all together except the prepared chalk, which must be added when the mixture is cold. Allow to stand 24 hours and filter.

TINCTURE OF KINO.

(*Tinctura Kino.*)

Kino (in fine powder) . . . 360 grains.
Alcohol, in sufficient quantity.
Water, ,, ,, ,,

Mix 2 measures of alcohol with 1 of water, then mi the powder thoroughly with an equal bulk of dry sand, and, having introduced the mixture into a conical glass percolator, gradually pour the menstruum upon it until ½ pint of tincture is obtained.

Properties.—Astringent.

Use.—In obstinate chronic diarrhœas, uterine, intestinal and pulmonary hemorrhages.

Dose.—One to two drachms.

TINCTURE OF KRAMERIA.

(*Tinctura Krameriæ.*)

Rhatany (in moderately fine powder) . . . . . 6 troy ounces.
Diluted Alcohol, a sufficient quantity.

Moisten the powder with 2 fluid ounces of diluted alcohol, pack it in a cylindrical percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Astringent, diuretic, detergent.

Use.—In dysentery, attended with bloody stools; in ulceration of the gums, and as a stomachic in dyspepsia.

Dose.—One to two drachms.

TINCTURE OF GALLS.

(*Tinctura Gallæ.*)

Nut Galls (in moderately fine powder) . . . . . 4 troy ounces.
Diluted Alcohol, a sufficient quantity.

Moisten the powder with a fluid once of the diluted alcohol, pack it in a glass percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—Astringent, tonic.

Use.—In intestinal hemorrhages, and those of the prostate gland, obstinate protracted diarrhœa and dysentery, used in gargles and injections.

Dose.—One to three drachms.

TINCTURE OF TOLU.

(*Tinctura Tolutana.*)

Balsam of Tolu . . . . 3 troy ounces.
Alcohol . . . . . . 2 pints.

Macerate the balsam with the alcohol until it is dissolved, then filter through paper.

Properties.—Expectorant, stimulant, tonic.

Use.—Used extensively on account of its pleasant flavour in cough remedies. It is useful in asthma, bronchitis, catarrh.

Dose.—Thirty to sixty drops, or more.

TINCTURE OF STRAMONIUM.

(*Tinctura Stramonii.*)

Stramonium Seed (in moderately fine powder	4 troy ounces.

Diluted Alcohol, a sufficient quantity.

Moisten the powder with a fluid ounce of diluted alcohol, pack it in a percolator, and gradually pour diluted alcohol upon it until 2 pints of tincture are obtained.

Properties.—A powerful narcotic producing vertigo, headache, more or less cerebral disturbance, has a laxative effect upon the bowels, effects the fauces and trachea.

Use.—In asthma, pertussis, neuralgia, syphilis cancer, rheumatism, and other spasmodic affections.

Dose.—Twenty to forty drops.

TINCTURE OF GENTIAN (COMPOUND).

Gentian (in moderately fine powder)	2 troy ounces.
Bitter Orange Peel . . .	1 „ „
Cardamoms	½ „ „

Diluted Alcohol, a sufficient quantity.

Mix the powders thoroughly, and, having moistened the mixture with 1½ fluid ounce of diluted alcohol, pack it in a percolator, and gradually pour diluted alcohol until 2 pints of tincture are obtained.

Properties.—Tonic, stomachic, aperient.

Use.—In dyspepsia, hysteria, jaundice, gout, an elegant adjunct to stomachic infusions. Externally in putrid ulcers.

Dose.—One to two drachms.

TINCTURE OF GUAIAC (COMPOUND).

Guaiac (in moderately fine powder)	8 troy ounces.
Aromatic Spirits of Ammonia .	1 pint.

Macerate for seven days, and filter through paper.

Properties.—Stimulant, sudorific, and antispasmodic.

Use.—In chronic rheumatism, for which it is more adapted than the following preparation.

Dose.—Thirty to sixty drops in milk, or any viscid fluid.

TINCTURE OF GUAIAC.

(*Tinctura Guaiaci.*)

Guaiac (in moderately coarse powder)	6 troy ounces.

Alcohol, in sufficient quantity.

Mix the powder thoroughly with an equal bulk of dry sand, pack the mixture moderately in a conical percolator and, having covered it with a layer of sand, gradually pour alcohol upon it until 2 pints of tincture are obtained.

Properties.—Stimulant, sudorific, laxative, and diaphoretic.

Use.—In chronic rheumatism, gout, cutaneous diseases.

Dose.—Thirty to sixty drops.

Incompatible with nitrous acid, sweet nitre, solution of chlorine.

TOILET CREAMS AND LOTIONS.

BALSAM OF FLOWERS.

Almond Oil	1 pound.
Violet Pomade	6 ounces.
Rose Pomade	6 „
Oil of Bergamot	1 drachm.

Mix.

GLYCERINE CREAM.

Glycerine	3 ounces.
Mucilage of Quince Seeds . .	10 „
Cochineal Powder	5 grains.
Hot Water	1½ drachm.
Alcohol	2½ „
Oil of Rose	8 drops.
Gum Acacia (powdered) . . .	30 grains.
Water	8 ounces.

Rub the cochineal with the hot water gradually, then add the alcohol; then rub the oil of rose with gum acacia, and gradually add the water. With this mix the solution first formed; filter, and add the glycerine and mucilage; shake well.

This is an excellent remedy for chapped hands, roughness of the face, etc. When applied to the skin it imparts an agreeably soft, smooth, and velvety feel.

ALMOND GLYCERINE.

Oil of Sweet Almonds . . .	4 gallons.
Lime Water	5 „
Saccharated Solution of Lime . .	10 ounces.
Oil of Cinnamon	4¾ „
Oil of Cloves	1¾ „
Oil of Sassafras	3¾ „
Oil of Rosemary	1¾ „
Oil of Lavender	1¾ „
Oil of Fennel	2½ „
Oil of Myrbane	1¾ „
Oil of Thyme (white) . . .	1¾ „

Mix the lime water with the solution of lime, and add 1 pint of oil, and shake well; repeat this until the oil is all mixed, then add the oils.

COMPOUND GLYCERINE LOTION.

Strained Honey	2 drachms.
Water	3 ounces.
Cologne	2 „
Glycerine	6 drachms.
Alcohol	8 ounces.
Oil of Bitter Almonds . . .	5 drops.

Mix. Apply with a soft sponge or napkin while the skin is damp, wiping dry with a towel.

CALAMINE LOTION.

The following is the formula prescribed by the late Dr. Tilbury Fox:—

Levigated Calamine	40 grains.
Oxide of Zinc	20 ,,
Glycerine	20 drops.
Rose Water, to make	1 ounce.

The main point is to get the white calamine and not the red. It is a very soothing application, and is a great favourite with ladies who have flushed faces. It should be applied with a small, soft sponge, and allowed to dry on, the excess of powder being lightly dusted off with a soft cloth.

CAMPHOR ICE.

Spermaceti	6 ounces.
White Wax	4 ,,
Oil of Almonds	32 ,,
Gum Camphor	5 ,,
Rose Water	3 ,,
Borax	2 drachms.

Dissolve the borax in the rose water, and add it to the other ingredients previously added together; stir the mixture till it is nearly cold, and pour it into moulds.

COCOA CREAM.

Oil of Cocoa	2 ounces.
Castor Oil	8 ,,
Alcohol	4 ,,
Otto of Rose	5 drops.

Melt the cocoa oil by gentle heat, and add it to the castor oil and alcohol previously mixed; mix thoroughly and add the perfume while cooling.

BISMUTH CREAM.

Subnitrate of Bismuth	2½ ounces.
Carbonate of Magnesia	20 grains.
Gum Acacia	½ ounce.
Aqua Rose	3½ ,,
Orange Flower Water	½ ,,
Essence of Vanilla	10 drops.
Carmine	2 grains.

Mix together thoroughly.

CREAM OF ALMONDS.

Sweet Almonds (blanched)	4 ounces
Rose Water	½ pint.
Orange Flower Water	½ ,,
Alcohol	2 ounces.
Castile Soap	2 drachms.
Spermaceti	2 ,,
White Wax	2 ,,
Oil of Roses	½ ,,

Beat the almonds with the water, and dissolve the wax, sperm, and soap by a gentle heat; mix the two by rubbing in a mortar; dissolve the oils in the alcohol, add all together, dissolve and strain.

COLD CREAM.

Rose Water	8 cunces.
Oil of Sweet Almonds	8 ,,
Spermaceti	6 drachms.
White Wax	4 ,,
Pulverised Borax	20 grains.
Otto of Roses	8 drops.

Melt together by a gentle heat the sperm, wax and oil of almonds, dissolve the borax in the water, and add slowly to the melted mixture; when mixed, take from the fire and stir until cold, then add the otto.

ROSE LIP-SALVE.

White Wax	5 drachms.
Spermaceti	2 ,,
Oil of Sweet Almonds	1 ounce.
Oil of Rose	8 drops.
Alkanet Root	1 drachm.

Heat the oil of almonds and alkanet together on slow fire. Melt the wax and sperm and add the two together; when nearly cold add the perfume and stir well.

HAGAN'S MAGNOLIA BALM.

Pure Oxide of Zinc	1 ounce.
Aqua Rose	4 ,,
Glycerine	1 drachm.
Perfume, q. s.	

Mix.

BAY RUM.

(Barber's Improved.)

Oil of Bay	6 fl. drachms.
Oil of Pimento	1 ,, ,,
Acetic Ether	1 ounce.
White Castile Soap (powdered)	4 drachms.
Alcohol	12 pints.
Water	10 ,,

Mix, and allow to stand one week, then filter.

MILK OF ALMONDS.

Spermaceti	½ ounce.
White Wax	¼ ,,
Castile Soap (white)	¼ ,,
Bitter Almonds (blanched)	5 ,,
Alcohol	6 ,,
Oil of Bitter Almonds	5 drops.
Oil of Bergamot	1 drachm.
Water (distilled)	1 pint.

Rub the almonds with the water, and dissolve the spermaceti, wax, and soap, by water-bath; mix the two, then add the alcohol (in which the oils have been dissolved) slowly, then strain.

GLYCERINE LOTION.

Glycerine	6 ounces.
Quince Seed	1 drachm.
Hot Water	21 ounces.
Alcohol	5 "

Colouring and flavouring to suit.

To the quince seed add a portion of the hot water. When mucilage is formed, strain, then add balance of water and flavouring.

CHAPPED HANDS.

Druggists are often called upon for something for chapped hands. Here is a good one.

Acid Carbolic	30 grains.
Yolk of One Egg.	
Glycerine	3 ounces.

Mix—form emulsion. A small portion to be rubbed gently upon the affected surface several times a day; wearing a pair of gloves will assist.

HAIR TONICS.

KILNER'S HAIR TONIC.

Quinine Sulph.	$\frac{1}{2}$ drachm.
Acid Sulph. Aro.	$\frac{1}{4}$ "
Tinct. of Cantharides	1 ounce.
Tinct. of Myrrh	1 "
Castor Oil	$\frac{1}{2}$ "
Alcohol	$7\frac{1}{2}$ "

Mix. Apply often.

ST. CLAIR'S HAIR TONIC.

Oil, Castor	3 ounces.
Oil of Bergamot	3 "
Oil of Cinnamon	15 drops.
Oil of Cloves	15 "
Oil of Lavender	$1\frac{1}{4}$ drachm.
Tinct. of Cantharides	2 "
Aqua Ammonia	4 "

Alcohol, sufficient to make 2 pints.

Mix. This is a splendid preparation.

LAVENDER HAIR TONIC.

Alcohol	$\frac{1}{2}$ gallon.
Castor Oil	$\frac{1}{2}$ "
Tinct. of Cantharides	$\frac{1}{2}$ ounce.
Oil of Bergamot	$\frac{1}{2}$ "
Oil of Lavender	$\frac{1}{2}$ "
Oil of Thyme (white)	$\frac{1}{4}$ "

Mix.

BLACKWELL'S HAIR RESTORATIVE.

Glycerine	1 ounce.
Tinct. of Cantharides	$\frac{1}{2}$ "
Sugar of Lead	2 drachms.
Lac. Sulphur	2 "
Oil of Bergamot	2 "
Rain Water	2 "

Mix. Apply once a day. Rub well with the hand.

ROSEMARY HAIR WASH.

Distilled Water of Rosemary	1 gallon.
Rectified Spirits	$\frac{1}{2}$ pint.
Pearl Ash	2 drachms.

Dissolve the pearl ash in the mixed alcohol, and mix.

BERNHARDT HAIR TONIC.

Oil of Castor	3 ounces.
Oil of Bergamot	3 drachms.
Oil of Cinnamon	15 drops.
Oil of Cloves	15 "
Oil of Lavender	$1\frac{1}{4}$ drachms.
Tinct. of Cantharides	2 "
Aqua Ammonia	4 "
Alcohol, sufficient to make	2 pints.

CREOLE HAIR TONIC.

Lac. of Sulphur	1 drachm.
Sugar of Lead	1 "
Pulverised Copperas	32 grains.
Tannin	32 "
Rose Water	1 pint.

Mix. By wetting the hair with the above compound once or twice a day, for a couple of weeks, it will be invigorated and keep the colour.

OWEN'S HAIR TONIC.

Rain Water	1 pint.
Lac. of Sulphur	$\frac{1}{4}$ ounce.
Sulphate of Iron	$\frac{1}{8}$ "
Oil of Bergamot	$\frac{1}{4}$ "

Mix, and apply to the hair daily.

RING'S AMBROSIA.

(*Said to be.*)

Lac. of Sulphur	1 drachm.
Acetate of Lead	1 "
Chloride of Sodium	2 "
Glycerine	2 ounces.
Bay Rum	8 "
Jamaica Rum	4 "
Soft Water	1 pint.

Mix. Shake before using.

EAU LUSTRALE.

Castor Oil	8 ounces.
Tincture of Cantharides	1 "
Alcohol	48 "
Oil of Bergamot	4 drachms.
Oil of Lavender	1 "
Oil of Cloves	30 drops.

Mix.

PERFUME FOR HAIR OIL.

Oil of Bergamot	1 ounce.
Oil of Rosemary	1 drachm.
Oil of Cassia	5 drops.
Oil of Cloves	5 ,,
Oil of Rose Geranium	10 ,,
Alcohol, sufficient to make	4 ounces.

Mix.

BAY RUM.

Oil of Bay	1 drachm.
Oil of Nutmegs	5 drops.
Oil of Orange	½ drachm.
Jamaica Rum	4 ounces.
Alcohol	2 pints.
Water, to make	4 ,,

Put oils in alcohol; add rum and water; let stand two or three weeks, and filter through magnesia and charcoal.

NEIL'S HAIR TONIC.

Tincture of Cinchona (Red)	3 ounces.
Glycerine	1 ,,
Jamaica Rum	1 ,,
Tannic Acid	½ drachm.
Tincture of Cantharides	2 ,,
Tincture of Capsicum	1 ,,
Cologne, to make	9 ounces.

Mix. Apply twice a day, rubbing well into the scalp.

JABORANDI HAIR TONIC.

Glycerine	2 ounces.
Jaborandi	4 drachms.
Cinchona Bark	1 ounce.
Alcohol	2 ,,
Bay Rum	2 ,,
Rose Water	10 ,,

Reduce the jaborandi and cinchona to a moderately fine powder, and exhaust them by percolation with the alcohol, bay rum and water, mixed together. To the percolate add the glycerine, and filter.

WALPOLE'S HAIR TONIC.

Glycerine	1 ounce.
Tincture of Cantharides	2 drachms.
Rose Water	3 ounces.

Mix.

DR. CATTELL'S HAIR DYE.

Nitrate of Silver	11 drachms.
Distilled Water	1 pint.
Green Soap	3 drachms.
Gum Arabic	1½

Mix, and allow to stand a day or two. Apply as needed.

CHESTNUT HAIR DYE.

Permanganate of Potash	1 drachm.
Powdered Gum Arabic	2 ,,
Rose Water	3 ounces.

Mix. Apply carefully with a tooth-brush, so as to avoid staining the skin.

LIGHTNING HAIR DYE.

(*The Mordant.*)

Pyrogallic Acid	1 drachm.
Distilled Water	5 ounces.
Alcohol	½ ,,

Mix.

(*The Dye.*)

Nitrate of Silver (crystals)	1 drachm.
Distilled Water	6 ,,
Aqua Ammonia	2 ,,

Or q. s., to make clear.

Mix. Apply the mordant first; as soon as it is dry, use the dye.

PREPARATION FOR REMOVING STAINS.

Sulphuret Potass.	½ drachm.
Distilled Water	1 ounce.

Mix.

DIAMOND DUST.

White Frostings	1 ounce.

Rub moderately fine in a mortar.
Used to powder the hair.

SHAMPOO WASH.

Borax (powdered)	4 drachms.
Bay Rum	2 ounces.
Aqua Ammonia	1 ,,
Rose Water	13 ,,

Mix. Apply a portion to the head and rub briskly; after the hair is thoroughly cleansed, rinse with clean water, dry quickly, and apply a little oil.

DRY SHAMPOO.

(*Sea Foam.*)

Sulphuric Ether	1 ounce.
Alcohol	1 ,,
Glycerine	1 ,,
Aqua Ammonia	1 drachm.
Castile Soap (sliced)	2 ounces.
Rain Water	2 pints.

Mix.

POMADES AND HAIR OILS.

The name of "Pomade" and "Pomatum" is derived from "Pomum"—an apple—because it was formerly made by immersing over-ripe apples in grease. If an apple be stuck all over with spice, such as cloves, then exposed to the air for a few days, and afterwards macerated in purified melted lard, or any other fatty matter, the grease will become perfumed. Repeating the operation with the same grease several times produces real pomatum.

In making pomades, the following directions ought to be strictly followed if you wish to make a really nice article. You need not follow the following remarks if you simply want a common article of pomatum.

Pomades ought to be made from *inodorous lard.*

Melt your lard in a hot water bath (boiling); take off the scum, after previously adding two ounces of powdered alum and two ounces of table salt. When the grease appears clear, let it grow cool.

The lard is now to be washed. This is done a small quantity at a time. Take about a pound on a slate slab, and let the slab slope sufficiently so that a good supply of water may trickle over it and run off at the same time. Keep the grease well stirred. In this way the water will remove any trace of the alum and salt.

Finally, the grease, when the whole is washed, is re-melted, the heat being maintained enough to drive off any adhering water. When cold, it is finished.

PHILOCOME POMADE.

White Wax	10	ounces.
Fresh Rose Pomatum	1	pound.
Fresh Acacia Pomatum	½	„
Fresh Jasmin Pomatum	½	„
Fresh Flower of Orange Pomatum	1	„
Fresh Tuberose Pomatum	1	„

Melt the wax in the oils by a water-bath at the lowest possible temperature. Stir the mixture as it cools. Do not pour out the philocome until it is nearly cool enough to set. Warm your utensils to the same heat as the philocome; otherwise the bottles chill the material as it poured in and make it appear of an uneven texture.

MARROW POMATUM.

Purified Lard	4	pounds.
Purified Suet	2	„
Oil of Lemon	1	ounce.
Oil of Bergamot	½	„
Oil of Cloves	3	drachms.

Melt the greases, and beat them up with a whisk or flat wooden spatula for half an hour or more; as the grease cools, the pomatum is rendered light and spongy. It is an excellent and a very profitable pomade.

MARROW CREAM.

Purified Lard	1	pound.
Almond Oil	1	„
Palm Oil	1	ounce.
Oil of Cloves	½	drachm.
Oil of Bergamot	½	ounce.
Oil of Lemon	1½	„

COMMON VIOLET POMADE.

Purified Lard	1	pound.
Acacia Pomatum	6	ounces.
Rose Pomatum	4	„

Work it up like marrow pomade.

HELIOTROPE POMADE.

Lard	4½	pounds.
Tallow	12	„
Benzoin Body	5	„
Tonka Bean Body	2	„
Civet Body	1	„
Oil of Lemon	12	drachms.
Oil of Bergamot	12	„
Oil of Bitter Almonds	1½	„
Oil of Neroli (Petit Grain)	1½	„
Balsam of Peru	12	

No colouring used.

For winter use, 9½ pounds of lard and 7 pounds of tallow.

HUNGARIAN POMADE.

(*Moustache Wax.*)

White Wax	4	ounces.
Lard	2	„
Canada Balsam	¼	„
Oil of Bergamot	1	drachm.
Oil of Lavender	15	drops.

Add the balsam to the wax and lard, previously heated; when nearly cold, add the essential oils and run into appropriate moulds. It be may coloured black or brown.

STICK POMADE.

Suet	1	pound.
Paraffin	8	ounces.
White Wax	2	„
Oil of Bergamot	1	„
Oil of Cassia	½	drachm.
Oil of Lavender	1	„

Mix by melting, and cast into moulds. It may be coloured black by the addition of a little lampblack finely ground with a little oil of almonds.

HAIR OILS.

HICKORY NUT OIL.

Cotton Seed Oil	15 gallons.
Oil of Fennel	2½ ounces.
Oil of Sassafras	3 „
Oil of Thyme	1¼ „
Oil of Rosemary	1¼ „
Oil of Cinnamon	4 „
Oil of Cloves	1¼ „
Oil of Lavender	1¼ „

Do not colour.

MACASSAR OIL.

Olive Oil	1 quart.
Oil of Roses	½ drachm.
Alcohol	2½ ounces.

Colour with alkanet root. Tie a small portion in a thin muslin bag, and let it lie in the oil till sufficiently coloured.

HAIR OIL.

Cotton Seed Oil (yellow)	15 gallons.
Oil of Lavender	12 ounces.
Oil of Thyme	2 „
Oil of Cloves	4 „

Do not colour.

GOLDEN OIL.

Oil of Cotton Seed (yellow)	15 gallons.
Oil of Bergamot	8 ounces.
Oil of Cassia	6 „
Oil of Cloves	4 „
Oil of Thyme (white)	1 „

Colour with alkanet root.

NEW YORK BARBERS' STAR.

Castor Oil	6½ pints.
Alcohol	1½ „
Oil of Citronella	¼ ounce.
Oil of Lavender	½ „

Mix.

BEARS' OIL.

Cotton Seed Oil	15 gallons.
Oil of Fennel	3 ounces.
Oil of Lavender	2 „
Oil of Citronella	3 „
Oil of Cloves	3 „

No colour.

SILVER OIL.

Cotton Seed Oil	15 gallons.
Oil of Red Cedar	1 ounce.
Oil of Geranium	2½ „
Oil of Cloves	2½ „
Oil of Citronella	1 „
Oil of Lemon Grass	1 „

No colour.

NIGHT BLOOMING CEREUS OIL.

Cotton Seed Oil	15 gallons.
Oil of Caraway	4 ounces.
Oil of Cloves	4 „
Oil of Sassafras	2 „
Oil of Lavender	10 „
Oil of Rosemary	2 „

Colour with alkanet root.

CRESCENT OIL.

Cotton Seed Oil	15 gallons.
Oil of Bergamot	8 ounces.
Oil of Cassia	6 „
Oil of Cloves	4 „
Oil of White Thyme	1 „

Mix. Colour with alkanet.

COCOANUT OIL.

Cocoanut Fat	2½ pounds.
Castor Oil	1 gallon.
Alcohol	1 „
Oil of Lavender	4 ounces.
Oil of Cloves	2 „
Oil of Cinnamon	2½ „
Oil of Rose Geranium	2 drachms.

Melt the cocoa fat at a gentle heat; add castor oil; mix thoroughly, and add alcohol; then perfume.

ROSE OIL.

Cotton Seed Oil (yellow)	15 gallons.
Oil of Red Cedar	3 ounces.
Oil of Geranium	6 „
Oil of Rose	1½ „
Oil of Cloves	6 „
Oil of Citronella	1½ „
Oil of Lemon Grass	1½ „
Oil of Bergamot	2 „

No colour.

ESSENCES AND EXTRACTS.

ESSENCE OF ANISE.

Oil of Anise	1 ounce.
Alcohol (95 per cent.)	9 „

Mix them, and filter.

ESSENCE OF ALLSPICE.

Oil of Allspice	1 ounce.
Alcohol (95 per cent.)	9 „

Mix, and filter.

ESSENCE OF BANANA.

Banana Fruit (peeled)	1 pound.
Alcohol (95 per cent.)	1 pint.
Water	1 „

Macerate for fourteen days, express and strain.

ESSENCE OF BERGAMOT.

Oil of Bergamot	1 ounce.
Alcohol (95 per cent.)	8 „
Tincture of Grass, q. s. to colour.	

Mix.

ESSENCE OF BAY.

Oil of Bay Leaves	1 ounce.
Cologne Spirit	16 „
Carbonate of Magnesium	2 „
Water	16 „

Alcohol may be used instead of Cologne spirit, but it is not quite as good. Dissolve the oil in a little of the spirit, and rub in a mortar, with the addition of the magnesium, then add sugar, if so required. Colour lightly with tincture of grass.

ESSENCE OF BLACKBERRY.

Blackberries (fresh)	2 pounds.
Alcohol	10 ounces.
Water	26 „

Macerate for fourteen days, express and strain through muslin.

ESSENCE OF CLOVES.

Oil of Cloves	1 ounce.
Magnesium	1 „
Alcohol (95 per cent.)	7 „

Proceed as in Essence of Bay.

ESSENCE OF CINNAMON.

Oil of Cinnamon	1 ounce.
Carbonate of Magnesium	2 „
Alcohol (95 per cent.)	18 „

Rub the oil with the magnesia, and a portion of the alcohol. Add the rest, and filter.

ESSENCE OF CORIANDER.

Oil of Coriander	2 drachms.
Carbonate of Magnesium	½ ounce.
Sugar	1 „
Alcohol	8 „
Water	8 „

Proceed as in Essence of Cinnamon.

ESSENCE OF CARAWAY.

Oil of Caraway Seed	1 ounce.
Carbonate of Magnesium	2 „
Sugar	2 „
Alcohol	16 „
Water	16 „

Proceed as in Essence of Cinnamon.

ESSENCE OF COFFEE.

Best Ground Coffee (burnt)	4 ounces.
Hot Water, q. s.	
Cologne Spirit	8 „

Pack in percolator, and pour on a pint of water, or until a pint has passed through; then add Cologne spirit. Mix.

ESSENCE OF GINGER.

Jamaica Ginger (ground)	1 pound.
Carbonate of Magnesium	2 drachms.
Alcohol (95 per cent.)	2 pints.

ESSENCE OF CITRONELLA.

Oil of Citronella	½ ounce.
Alcohol (or Cologne Spirit)	8 „
Water	8 „

Mix. Colour with tincture of grass.

ESSENCE OF CARDAMOM.

Oil of Cardamom	1 drachm.
Carbonate of Magnesium	4 „
Alcohol (95 per cent.)	4 ounces.
Water	4 „

ESSENCE OF CASSIA.

Oil of Cassia	1 ounce.
Carbonate of Magnesium	2 „
Sugar	2 „
Alcohol (95 per cent.)	16 „
Water	16 „

ESSENCE OF JUNIPER.

Oil of Juniper Berries	½ ounce.
Carbonate of Magnesium	1 „
Alcohol	8 „
Water	8 „

ESSENCE OF LAVENDER.

Oil of Lavender	½ ounce.
Carbonate of Magnesium	1 ,,
Alcohol	8 ,,
Water	8 ,,

ESSENCE OF LEMON.

Oil of Lemon	½ ounce.
Carbonate of Magnesium	1 ,,
Sugar	½ ,,
Alcohol	8 ,,
Water	8 ,,

Colour yellow.

ESSENCE OF MACE.

Mace (moderately fine)	6 ounces.
Cologne Spirit	2 pints.

Macerate for fourteen days, express and filter through paper.

ESSENCE OF NUTMEG.

Oil of Nutmeg	1½ drachm.
Alcohol	4 ounces.
Carbonate of Magnesium	3 drachms.
Water	4 ounces.
Sugar	½ ,,

Proceed as in Essence of Bay.

ESSENCE OF ORANGE.

Oil of Orange	1 ounce.
Carbonate of Magnesium	2 ,,
Sugar	2 ,,
Alcohol	8 ,,
Water	8 ,,

Colour with saffron. Proceed as in Essence of Bay.

ESSENCE OF PEPPERMINT.

Oil of Peppermint	1 ounce.
Cologne Spirit	8 ,,
Peppermint (herb)	¼ ,,
Water	8 ,,

Mix, and filter.

ESSENCE OF PINEAPPLE.

Butyric Ether	2½ ounces.
Acetic Ether	40 drops.
Alcohol	1 pint.
Glycerine	½ drachm.
Water	2 ounces.

Mix.

ESSENCE OF RASPBERRY.

Butyric Ether	1 drachm.
Acetic Ether	45 drops.
Sweet Spirits Nitre	10 ,,
Glycerine	20 ,,
Cologne Spirit	2½ ounces.

Colour with alkanet root. Mix and filter.

ESSENCE OF ROSE.

Oil of Rose	30 drops.
Alcohol	8 ounces.
Water	8 ,,

Dissolve the oil in the spirit, add the water, and colour with carmine.

ESSENCE OF SASSAFRAS.

Oil of Sassafras	1 ounce.
Carbonate of Magnesium	2 ,,
Cologne Spirit	16 ,,
Water	16 ,,

Proceed as in Essence of Bay.

ESSENCE OF SPRUCE.

Oil of Spruce	½ ounce.
Magnesium	1 ,,
Alcohol	8 ,,
Water	8 ,,

ESSENCE OF SARSAPARILLA.

Oil of Wintergreen	½ ounce.
Oil of Sassafras	3 drachms.
Oil of Anise	1 ,,
Carbonate of Magnesium	1 ounce.
Sugar	1 ,,
Alcohol	12 ,,
Water	4 ,,

Colour with burnt sugar, if so desired. Proceed as in Essence of Bay.

ESSENCE OF STRAWBERRY.

Butyric Ether	½ ounce.
Acetic Ether	½ ,,
Cologne Spirit	1 pint.

Colour with tincture of carmine.

EXTRACT OF TONKA.

Tonka Bean (cut small)	2 ounces.
Alcohol	12 ,,
Water	4 ,,

Rub the beans with a little sugar, add the spirit and water, and macerate for ten days; colour to suit.

ESSENCE OF WINTERGREEN.

Oil of Wintergreen	3 ounces.
Cologne Spirit	29 ,,

Colour to suit. Mix and filter.

ESSENCE OF WORMWOOD.

Oil of Wormwood	½ ounce.
Carbonate of Magnesium	1 ,,
Alcohol	8 ,,
Water	8 ,,

Colour to suit.

ESSENCE OF NECTAR.

Butyric Ether	1 ounce.
Oil of Wintergreen	1 drachm.
Oil of Bitter Almonds	15 drops.
Alcohol	12 ounces.
Water	2 „

Mix and filter; colour to suit.

ESSENCE OF ORGEAT.

Oil of Bitter Almonds	2 drachms.
Acetic Ether	2 „
Butyric Ether	½ ounce.
Alcohol	15 „

Dissolve the oils in the ethers; add the alcohol and filter.

ESSENCE OF PEAR.

Acetate Oxide of Amyl	2 ounces.
Acetic Ether	1 drachm.
Alcohol (95 per cent.)	12 ounces.
Water	2 „

Mix.

ESSENCE OF QUINCE.

Pelargonic Ether	2 ounces.
Alcohol (95 per cent.)	12 „
Water	2 „

Mix.

ESSENCE OF BITTER ALMOND.

Oil of Bitter Almond	1½ drachm.
Carbonate of Magnesium	2 „
Sugar	1 ounce.
Cologne Spirit	8 „
Water	8 „

Proceed as in Essence of Bay.

ESSENCE OF CELERY.

Oil of Celery	2 drachms.
Carbonate of Magnesium	½ ounce.
Sugar	1 „
Cologne Spirit	8 „
Water	8 „

Proceed as in Essence of Bay.

ESSENCE OF APPLE.

Acetate of Oxide Amyl	2 ounces.
Valerianate of Ammonia	1 drachm.
Cologne Spirit	12 ounces.
Water	2 „

Mix.

ESSENCE OF PENNYROYAL.

Oil of Pennyroyal	½ ounce.
Carbonate of Magnesium	1 „
Sugar	1 „
Cologne Spirits	8 „
Water	8 „

Proceed as in Essence of Bay.

EXTRACT OF VANILLA.

Vanilla Pods	1 ounce.
Sugar	1 „
Cologne Spirits	12 „
Water	4 „

Slit the pods and cut them very fine, then mix them with sugar, and bruise until moderately fine, then mix with spirits and water, and put in a warm place; macerate for two weeks, occasionally shaking; filter.

EXTRACT OF VANILLA.

(*Artificial.*)

Balsam Peru	1 drachm.
Oil of Orange	½ „
Extract of Orris	4 ounces.
Tonka Beans (coarse powdered)	2 „
Tincture of Castor	15 drops.
Cologne Spirit	8 ounces.
Carbonate of Magnesium	3 drachms.
Water	4 ounces.

Dissolve the balsam and oil in two ounces of spirits, and rub with the magnesia; add the balance of the ingredients, and let stand in a warm place for four weeks, then filter.

EXTRACT OF ROSEMARY.

Oil of Rosemary	½ ounce.
Carbonate of Magnesium	1 „
Cologne Spirit	8 „
Water	8 „

EXTRACT OF NUTMEG.

Oil of Nutmeg	3 drachms.
Carbonate of Magnesium	6 „
Sugar	1 ounce.
Water	8 „
Cologne Spirit	8 „

ESSENCE OF HEMLOCK.

Oil of Hemlock	½ ounce.
Carbonate of Magnesium	1 „
Cologne Spirit	8 „
Water	8 „

ESSENCE OF JAMAICA GINGER.

Jamaica Ginger	6 ounces.
Grains of Paradise	1 „
Mace	½ „
Oil of Lemon	1 drachm.
Alcohol	20 ounces.

Reduce the drugs to a coarse powder, and moisten with four ounces of alcohol; pack in a percolator, and add balance of alcohol, in which add the lemon; allow to stand twenty-four hours, and percolate with diluted alcohol sufficient for 20 ounces.

LEMON EXTRACT.

Alcohol	10 gallons.
Water (soft)	4 ,,
Oil of Lemon	3 pounds.

Remarks.—Put the oil into 3 gallons of the alcohol, and let stand for twenty-fours; then have your water warm and pour in 1 gallon, then 1 of alcohol, then ½ gallon of water, then 1 gallon of alcohol, and so on until alcohol and water are gone. Be sure and put in the alcohol last. Let stand, and filter through a felt bag kept for nothing but lemon extract. Colour to suit with yellow aniline.

VANILLA EXTRACT.

Alcohol	10 gallons.
Vanilla Beans	3 pounds.
Soft Water	5 gallons.
Glycerine	2 pounds.

Remarks.—Grind in a sausage-cutter the beans, warm the alcohol over a water-bath, put in the beans, and stir.

STRAWBERRY EXTRACT.

Alcohol	5 gallons.
Concentrated Strawberry Ether	3 ,,
Oil of Orange (Portugal)	2 pounds.

Remarks.—Proceed as for lemon. Colour to suit with tincture of red aniline.

CINNAMON EXTRACT.

Alcohol	10 gallons.
Oil of Cassia	8 ounces.
Oil of Cinnamon (true)	2 ,,
Warm Water	5 gallons.

Remarks.—Proceed as for lemon, and colour with red sandal and burnt sugar to the colour of cinnamon true.

BANANA EXTRACT.

Alcohol	5 gallons.
Concentrated Banana Ether	4 pounds.
Soft Water	10 gallons.
Glycerine	3 pounds.

Mix, and it is ready for use.

COCHINEAL EXTRACT.

Red Vinegar	1 gallon.
Glycerine	2 pounds.

Mix, and it is ready for use.

ORANGE EXTRACT.

Alcohol	10 gallons.
Water	3 ,,
Oil of Portugal	2 pounds.

Proceed same as for lemon. Colour to suit with tincture of yellow aniline.

BLACKBERRY EXTRACT.

Alcohol	5 gallons.
Concentrated Blackberry Ether	5 pounds.
Soft Water (cold)	10 gallons.
Glycerine	3 pounds.

Mix, and it is ready for use.

NUTMEG EXTRACT.

Alcohol	1 gallon.
Ground Nutmeg	1 pound.
Warm Water	32 ounces.

Let stand two weeks; it is then ready for use. No colour.

CLOVES EXTRACT.

Alcohol	1 gallon.
Cloves (ground)	1 pound.
Warm Water	32 ounces.

Let it stand for three weeks; it is then ready for use. No colour.

CELERY EXTRACT.

Alcohol	8 gallons.
Essence of Celery	2 ,,
Warm Water	5 ,,

Mix the essence with the alcohol, and add the water. Colour with burnt sugar.

ROSE EXTRACT.

Alcohol	10 gallons.
Oil of Rose	1 ounce.
Oil of Geranium (Rose)	2 drachms.
Oil of Cloves	1 ,,
Warm Water	5 gallons.

Remarks.—Proceed as for lemon; if coloured, use red aniline tincture to suit.

WINTERGREEN EXTRACT.

Alcohol	10 gallons.
Oil of Wintergreen	1 pound.
Warm Water	5 gallons.

Remarks.—Let stand twenty-four hours; then add water. Colour to suit with tincture of red aniline.

COFFEE EXTRACT.

Alcohol (warm)	5 gallons.
Glycerine	½ pound.
Warm Water	1 gallon.
Ground Coffee	8 pounds.

Remarks.—Heat the alcohol in a water-bath to boiling point; then add the coffee. Let stand twenty-four hours, and add glycerine, then warm water.

ALMOND EXTRACT.

Alcohol	10 gallons.
Oil of Bitter Almonds	1 pound.
Warm Water	5 gallons.

Remarks.—Mix the oil with the alcohol, and after standing twenty-four hours, add the warm water; it is then ready for use.

SARSAPARILLA EXTRACT.

Alcohol	10 gallons.
Oil of Sassafras	8 ounces.
Oil of Wintergreen	8 „
Warm Water	5 gallons.

Remarks.—Let stand twenty-four hours, then add warm water. Colour to suit with caramel.

GINGER EXTRACT.

Alcohol	8 gallons.
Mace (powdered)	1 pound.
Essence of Ginger	2 gallons.
Warm Water	4 „

Remarks.—Mix the alcohol and mace, and let stand twenty-four hours. Put in the essence and then the water. No colour, but it may be coloured with burnt sugar.

PEACH EXTRACT.

Alcohol	10 gallons.
Concentrated Nectarine Ether	2 pounds.
Concentrated Pine Apple Ether	1 „
Oil of Orange (Portugal)	2 ounces.
Warm Water	5 gallons.
Glycerine	2 pounds.

Remarks.—Mix the oil of orange and alcohol, then add the ethers, and then the warm water. Colour with burnt sugar, same as pineapple.

NECTARINE EXTRACT.

Alcohol	5 gallons.
Concentrated Nectarine Ether	5 pounds.
Soft Water (cold)	10 gallons.
Glycerine	3 pounds.

Colour same as pineapple.

RASPBERRY EXTRACT.

Alcohol	5 gallons.
Concentrated Raspberry Ether	5 pounds.
Soft Water (cold)	10 gallons.
Glycerine	3 pounds.

Remarks.—Colour to suit with tincture of red aniline.

TOOTH POWDERS AND MOUTH WASHES.

There is scarcely a subject, of a personal character, so sadly neglected and so little understood by the people in general, as the care of the teeth.

In view of this fact, the Dental Society of Philadelphia offered a prize for the best essay on the subject, the same to be published for the benefit of the public. The prize was awarded for the following rules:—

First.—Cleanse your teeth once, or oftener, every day. Rinse the mouth after eating. Cleansing the teeth consists in removing every particle of foreign matter from around the teeth and gums.

Second.—To cleanse, use well-made brushes, soft quill or wood toothpicks, an antacid styptic tooth wash, and precipitated chalk. If these means fail, apply to a regular dentist.

Third.—Avoid eating hot food. Thoroughly masticate the food, and well salivate it before swallowing.

Fourth.—Parents ought carefully to attend to the child's second dentition. Prevail upon your children to visit, at frequent intervals, a careful and skilful operator.

Fifth.—Remember that four of the permanent double-teeth come in at the age of six years. They are very liable to decay early, are very large, and should never be allowed to require extracting.

Sixth.—Never allow any one to extract a tooth or dissuade you from having them filled, unless absolutely necessary.

Seventh.—Carelessness and procrastination are responsible for a large proportion of teeth that are lost.

The teeth were never intended to take the place of nut-crackers, nor to rival scissors in cutting thread. The teeth must be taken care of, or your health will suffer.

Remember, a clean tooth would not decay in a hundred years.

SUPERIOR MOUTH WASH.

White Castile Soap (old)	2 drachms.
Alcohol	3 ounces.
Honey	1 „
Perfume, as below	4 „

Dissolve the soap in the alcohol, and add the other ingredients.

PERFUME FOR TOOTH POWDERS.

Asarum Canadens.	½ ounce.
Orris Root	½ „
Strong Alcohol	8 „

Make a tincture, then add

Tincture of Musk	1 drachm.
Essence of Mille Fleurs	½ „
Essence of Patchouli	20 drops.

Mix.

ORRIS TOOTH POWDER.

Prepared Chalk	1 pound.
Powdered Borax	8 ounces.
Powdered Myrrh	1 ,,
Powdered Orris	4 ,,

Mix thoroughly, and put through a fine silk sieve.

VIOLET TOOTH POWDER.

Prepared Chalk	6 ounces.
Cuttlefish Bone	3 ,,
Rose Pink	2 ,,
Orris Root	2 ,,
Essence of Violets	1 drachm.

Mix thoroughly; put through a fine silk sieve, and colour with indigo sufficient to strike a violet tint.

TOOTH POWDER.

White Sugar	1 pound.
Prepared Chalk	1 ,,
Carbonate of Magnesia	2 ,,
Cuttlefish Bone	½ ,,
Cream of Tartar	10 ounces.
Rose Pink	10 ,,

Rub these to a very fine powder, then mix with perfume to suit.

SCENT FOR TOOTH POWDER.

Oil of Cloves	2 drachms.
Oil of Cinnamon	2 ,,
Oil of Orange Peel	2 ,,
Extract of Vanilla	2 ,,

The above is for one pound of the powder.

For colouring tooth powders various shades of red and pink, use armenian bole, protoxide of iron and carmine or cochineal lakes. Avoid *aniline reds*, as they are injurious to the teeth.

CUTTLEFISH TOOTH POWDER.

Powdered Cuttlefish Bone	½ pound.
Precipitated Carbonate of Lime	1 ,,
Powdered Orris Root	½ ,,
Oil of Lemon	1 ounce.
Oil of Neroli	½ drachm.

Mix thoroughly, and powder very fine.

CHARCOAL TOOTH PASTE.

Chlorate of Potassa	½ drachm.
Mint Water	1 ounce.

Form a solution, then add

Powdered Charcoal	2 ounces.
Honey	1 ,,

Mix thoroughly.

QUINIA TOOTH POWDER.

Sulphate of Quinia	½ drachm.
Pulverised Orris Root	4 ounces.
Pulverised Starch	5 ,,
Pulverised Chalk (prepared)	½ pound.

Pulverise fine each article, and then mix thoroughly.

COCOA SOAP TOOTH POWDER.

Pulverised French Chalk	1 pound.
Lily White	1 ,,
White Earth	1 ,,
Pulverised Sugar	½ ,,
Powdered Cocoa Soap	½ ,,
Oil of Wintergreen	¼ ounce.
Oil of Rose	½ drachm.
Oil of Cloves	½ ,,
Oil of Sassafras	¼ ,,

Mix and pulverise thoroughly.

ROSE TOOTH POWDER.

Pulverised Corn Starch	2½ pounds.
Pulverised Orris Root	¼ ,,
Terra Alba	2 ,,
Carbonate of Magnesia	½ ,,
French Chalk	½ ,,
Oil of Cloves	½ drachm.
Oil of Rose	1 ,,
Oil of Bergamot	½ ,,

Mix and pulverise thoroughly.

DETERGENT MOUTH WASH.

Alum (powdered)	30 grains.
Simple Syrup	1 ounce.
Rose Water	3 ,,

Mix. Should the mouth be very sore, dilute with water at first, and use pure afterwards.

FARINA'S TOOTH POWDER.

Cuttlefish Bone	2 pounds.
Pulverised Orris Root	2 ,,
Pulverised White Sugar	½ ,,
Oil of Rosemary	4 drachms.
Oil of Orange Peel	2 ,,
Oil of Lemon	2 ,,
Oil of Neroli	½ ,,
Oil of Bergamot	2 ,,

Mix, and pass through a silk sieve.

CAMPHORATED TOOTH POWDER.

Prepared Chalk	8 ounces.
Powdered Cuttlefish Bone	4 ,,
Camphor	1 ,,
Oil of Cloves	1 drachm.

Dissolve the camphor with alcohol, and then add to the remaining ingredients, and mix thoroughly.

EAU DE BOTOT.

Star of Anise	1	ounce.
Cloves	2	drachms.
Cinnamon (Ceylon)	2	,,
Oil of Peppermint	20	drops.
Diluted Alcohol	28	ounces.

Macerate for eight days, and filter if desired; this may be coloured with a little cochineal infused with the other ingredients.

PERUVIAN TOOTH POWDER.

Pulverised Peruvian Bark (red)	2	ounces.
Pulverised Orris Root	4	,,
Bole (Armenian)	4	,,
Prepared Chalk	4	,,
Powdered Myrrh	2	,,
Cassia Bark	2	,,
Otto of Roses	1	drachm.

Mix.

MOUTH WASH.

Tincture of Orris	4	ounces.
Alcohol	4	,,
Rose Water	4	,,
Otto of Almonds	3	drops.

Mix.

PARISIAN TOOTH POWDER.

Pulverised Cream of Tartar	2½	pounds.
Pulverised Alum	1	,,
Pulverised Cuttlefish Bone	1	,,
Pulverised Carbonate of Magnesia	½	,,
Pulverised Cochineal	3	ounces.
Pulverised Cassia	¾	,,
Pulverised Cloves	1½	,,
Oil of Geranium	½	drachm.
Oil of Peppermint	1¼	,,
Oil of Bergamot	½	,,

Mix.

LEMON TOOTH POWDER.

Powdered Arrow Root	1	pound.
Powdered Orris Root	3	ounces.
Oil of Lemon	20	drops.
Oil of Cloves	10	,,
Oil of Bergamot	12	,,

Rub the oils with the powders until thoroughly mixed, then colour with indigo sufficient to strike a violet tint.

TOILET SOAPS.

ALA BOUQUET SOAP.

Prepared Soap	10	pounds.
Oil of Bergamot	4	ounces.
Oil of Lemon	1	,,
Oil of Cinnamon	2	,,
Oil of Cloves	1	,,
Oil of Lavender	6	,,

Mix, and colour with vermilion.

ERASIVE SOAP.

Castile Soap	2	pounds.
Carbonate of Potassa	½	,,
Hot Water	½	pint.
Aqua Ammonia	½	ounce.
Camphor Gum	½	,,
Alcohol	½	,,

Cut the soap into fine pieces, and boil it with the potassa until thick enough to mould into cakes. Dissolve the camphor with the alcohol, add the ammonia, and mix all together and mould the desired shape. Colour to suit.

GREEN SOAP.

(*Lehlback's.*)

Olive Oil	16	ounces.
Caustic Potash	6	,,

Water, a sufficiency.

Dissolve five ounces of the potash in two pints of water, add eight ounces of this solution to the oil, in suitable vessel, and place over a slow fire; when it becomes thick, add the remaining solution; continue the heat until the mixture becomes a yellow colour; dissolve the remaining potassa in two pints of water, and add it to the mass; evaporate to the proper consistency. Colour with finely powdered indigo, if preferred.

SAND SOAP.

(*Piesse.*)

Prepared Soap	8	pounds.
Marine Soap	7	,,
Sifted Silver Sand	25	,,
Oil of French Lavender	2	ounces.
Oil of Thyme	2	,,
Oil of Caraway	2	,,
Oil of Cassia	2	,,

Mix in the usual way.

WINDSOR SOAP.

(*Piesse.*)

Prepared Soap	40	pounds.
Burnt Umber	4	ounces.
English Vermilion	1	,,
Lampblack	½	,,
Oil of Cinnamon	2	,,
Oil of Bergamot	2	,,
Oil of Thyme	1½	,,
Oil of Peppermint	1½	,,
Oil of Caraway	1½	,,
Oil of Cloves	1½	,,
Oil of Lavender	2	,,

Mix according to the usual way.

WHITE WINDSOR.

(*Piesse.*)

Curd Soap	50	pounds.
Marine Soap	10	,,
Oil Soap	14	,,
Oil of Cassia	2	ounces.
Oil of Cloves	2	,,
Oil of Caraway	4	,,
Oil of Thyme	3½	,,
Oil of Rosemary	4	,,

Mix in the usual way.

BROWN WINDSOR.

(*Piesse.*)

Curd Soap	40	pounds.
Yellow Soap	14	,,
Marine Soap	10	,,
Oil Soap	12	,,
Oil of French Lavender	1	ounce.
Oil of Thyme	1	,,
Oil of Caraway	1	,,
Oil of Cloves	1	,,
Oil of Neroli (Petit Grain)	1½	,,
Oil of Cassia	¾	,,

Caramel, sufficient to colour.

Mix, and proceed in the usual manner.

FRANGIPANI SOAP.

Pink Curd Soap	7	pounds.
Oil of Rose	2	drachms.
Oil of Neroli	4	,,
Oil of Sandal	1½	ounce.
Oil of Vetivert	4	drachms.
Civet	2	,,

Rub the civet with the oils, then mix and beat in the usual manner.

BATH SOAP.

Curd Soap	20	pounds.
Oil of Cloves	6	drachms.
Oil of Lemon	1	ounce.
Oil of Maryolaine	6	drachms.
English Vermilion	4	ounces.

Mix. Rub the vermilion with the perfume, then add to the soap, and mix and beat in the usual way.

ROYAL BOUQUET SOAP.

Prepared Soap	40	pounds.
Oil of Rosemary	3	drachms.
Oil of Cinnamon	11	,,
Oil of Sassafras	6	,,
Oil of Fennel	6	,,
Oil of Lemon	6½	,,
Oil of Cloves	6½	,,
Oil of Peppermint	3	,,
Oil of Maryolaine	3	,,
Oil of Thyme	3	,,
Colour, Burnt Sugar	4	ounces.
Colour, Burnt Terra Sienna	2¼	,,

Rub the terra sienna with the oils, and add the burnt sugar separately.

SULPHUR SOAP.

White Castile Soap	½	pound.
Flower of Sulphur	1	ounce.
Alcohol	1	,,
Oil of Cloves	½	drachm.
Oil of Lavender	1	,,

Mix. Beat the whole to a smooth mass, in a mortar.

PALMER'S BOUQUET SOAP.

White Castile Soap	10	pounds.
Oil of Lavender (English)	2	drachms.
Oil of Citronella	2¼	,,
Oil of Lemon	4	,,
Oil of Bergamot	4	,,
Palm Oil	2	pounds.

Melt the soap and palm oil together, by a gentle heat, and when nearly cold, add the perfumes, previously dissolved in sufficient alcohol.

TRANSPARENT SOAP.

Palm Oil	8	pounds.
Cocoa Nut Oil	2	,,
Soda Lye, 36°	5	,,
Alcohol	4	pints.
Oil of Thyme	2	drachms.
Oil of Lavender	3	,,
Oil of Cassia	4	,,
Oil of Cloves	2	,,
Oil of Citronella	2	,,

Melt the oils over a warm bath, then remove, and stir till nearly cold; then mix the alcohol and lye together, and put them over water-bath in a vessel, and the oils in another; let them heat for five minutes, but take care they do not boil, then mix the two and stir them well together. The soap is done when a scum forms over the top; when done pour into a tin can and cool as quick as possible; dissolve the oils in 1 pint of the alcohol, and add 1 pound of glycerine; mix together and mould the required shape.

LADIES' FAVOURITE SOAP.

Castile Soap (best)	10	pounds.
Palm Oil	2	,,
Soda Lye	5	,,
Alcohol	4	pints.
Oil of Neroli	4	drachms.
Oil of Bergamot	1	ounce.
Oil of Lavender	1½	,,
Oil of Cloves	1	,,
Oil of Cinnamon	½	,,

Mix, and proceed as in the transparent soap, only cutting the soap into thin slices, before adding the oil.

HONEY SOAP.

Prepared Soap	25	pounds.
Vermilion	2	ounces.
Yellow Aniline	3	drachms.
Oil of Lavender	2½	ounces.
Oil of Citronella	3¼	,,
Oil of Lemon	1	,,
Oil of Cloves	1½	,,
Oil of Bergamot	1	,,

Mix, and proceed in the usual manner.

JOCKEY CLUB SOAP.

Glycerine	2	pounds.
Cocoanut Oil	2	”
Tallow Oil	6	”
Soda Lye, 36°	5	”
Alcohol	4	pints.
Otto of Rose (Virgin)	½	ounce.
Otto of Sandal Flav.	2	drachms.
Otto of Bergamot	2	”
Otto of Neroli (super.)	2	”

Proceed as with the transparent soap, only do not add the glycerine mentioned in the directions.

ENGLISH BATH.

Tallow Oil	4	pounds.
Palm Oil	4	”
Cocoanut Oil	2	”
Alcohol	4	pints.
Soda Lye, 36°	5	pounds.
Oil of Sassafras	½	ounce.
Oil of Peppermint	⅓	”
Oil of Lemon	½	”
Oil of Cinnamon	⅓	”
Oil of Lavender	⅓	”

Mix, and proceed as in the directions of the transparent soap, omitting the glycerine.

PALM OIL AND GLYCERINE SOAP.

Palm Oil	6	pounds.
Glycerine	2	”
Soda Lye, 36°	4	”
Alcohol	3	pints.
Oil of Lemon	½	ounce.
Oil of Bergamot	⅓	”
Oil of Lavender	⅓	”
Oil of Citronella	½	”

Mix, and proceed as in the directions of the transparent soap, omitting the glycerine.

CARBOLIC ACID SOAP.

Prepared Soap	20	pounds.
Alcohol	2	pints.
Carbolic Acid	1	pound.
Caustic Potassa	4	ounces.
Oil of Lemon	1	”
Oil of Bergamot	½	”
Oil of Lavender	½	”
Oil of Citronella	½	”

Melt the soap, add the carbolic acid, potassa, and part of the alcohol; dissolve the oils in the remaining alcohol, and mix thoroughly; when cool enough, run into moulds.

SACHET POWDERS.

ACACIA SACHET.

Cassia Flowers	1	pound.
Orris Root	1	”

Mix.

AU CYPRE.

Ground Rose Leaves	1	pound.
Ground Sandal Wood	1	”
Ground Cedar Wood	1	”
Otto of Rose	2	drachms.

Mix and sift. Care should be taken to have the woods in very fine powders before mixing.

CLOVE PINK SACHET.

Orris Root (powdered)	2	ounces.
Lavender Flowers	1	”
Patchouli Leaves	½	”
Cloves	2	drachms.
Deer Tongue	2	”
Musk Tonquin	2	grains.
Pimento (ground)	1	drachm.
Otto of Roses	10	drops.
Otto of Neroli	10	”
Oil of Sandal Wood	15	”
Oil of Lavender (English)	10	”

Mix.

FRANGIPANI SACHET.

Orris Root (powdered fine)	3	pounds.
Vetivert	¼	”
Sandal Wood	¼	”
Grain Musk	1	ounce.
Oil of Neroli	1	drachm.
Oil of Rose	1	”
Oil of Sandal	1	”

Mix these well together.

HELIOTROPE SACHET.

Orris Root (ground)	2	pounds.
Rose Leaves (ground)	1	”
Tonka Beans (ground)	8	ounces.
Vanilla	4	”
Grain Musk	1	drachm.
Oil of Bitter Almonds	5	drops.

Mix.

LAVENDER SACHET.

Lavender Flowers (ground)	1	pound.
Gum Benzoin (powdered)	4	ounces.
Oil of Lavender	2	drachms.

Mix.

MILLEFLEURS.

Flowers of Lavender	½	ounce.
Cloves (powdered)	2	drachms.
Buds of Cassia (powdered)	2	"
Coriander Seeds (powdered)	½	ounce.
Orris Root (powdered)	2	"
Vanilla Beans (powdered)	1	drachm.
Nutmegs (powdered)	½	"
Gum Benzoin (powdered)	½	"
Musk	5	grains.
Oil of Sandal	8	drops.
Oil of Lavender (English)	5	"
Oil of Patchouli	3	"
Oil of Verbena	2	"
Oil of Neroli	5	"
Otto of Roses	5	"

MARECHALE SACHET.

Orris Root (ground)	1	pound.
Coriander Seeds (ground)	6	ounces.
Mace (ground)	2	"
Cassia "	1	"
Cloves "	1	"
Musk Seeds (ground)	1	"
Yellow Sandal Wood	1	"

Mix.

PATCHOULI SACHET.

Patchouli Herb (ground)	1	pound.
Oil of Patchouli	20	drops.

Mix.

JOCKEY CLUB SACHET.

Lavender Flowers (ground)	½	ounce.
Rose Leaves (ground)	1½	"
Orris Root (ground)	2	"
Vanilla Beans (ground)	½	drachm.
Extract Jasmine	2	"
Musk	4	grains.
Otto of Roses	10	drops.
Oil of Sandal	20	"
Oil of Neroli	6	"

Mix.

LA PIERCE SACHET.

Dried Lavender	½	pound.
Dried Rose Leaves	1	"
Dried Marjoram	3	ounces.
Dried Mint	4	"
Dried Lemon Thyme	3	"
Dried Thyme	4	"
Calamus (powder)	1	pound.
Ground Cloves	2	ounces.
Musk (grain)	1	drachm.

Mix.

ROSE SACHET.

Sandal Wood (ground)	8	ounces.
Red Rose Leaves (ground)	1	pound.
Oil of Rose	2½	drachms.

Mix.

Note.—Sandal wood, before being ground, is no use whatever to the druggist, on account of its extreme toughness; therefore be sure that it is reduced to powder before buying.

VIOLET SACHET.

Black Currant Leaves (powdered)	1	pound.
Rose Leaves (powdered)	1	"
Cassia Buds (powdered)	½	"
Pulverised Orris Root	2	"
Gum Benzoin (powdered)	½	"
Otto of Almonds	¼	drachm.
Otto of Roses	¼	"
Grain Musk	1	"

Mix well, and let them stand for a week before using.

WILD FLOWERS SACHET.

(*Piesse.*)

Coriander Seeds (ground)	1	ounce.
Wild Ginger (ground)	1	"
Lavender Flowers (ground)	1	"
Deer Tongue (ground)	½	"
Sweet Flag (root, ground)	2	drachms.
Patchouli Leaves (ground)	1	ounce.
Nutmeg (ground)	1	drachm.
Extract of Jasmine	2	"
Oil of Patchouli	5	drops.
Oil of Sandal	20	"
Oil of Bergamot	1	drachm.
Oil of Verbena	5	drops.
Oil of Neroli	10	"

Mix.

PORTUGAL SACHET.

Dried Orange Peel (ground)	1	pound.
Dried Orris Root (ground)	½	"
Dried Lemon Peel (ground)	½	"
Oil of Lemon Grass	¼	drachm.
Otto Neroli	20	drops.
Otto Orange Peel	1	ounce.

Mix.

VERBENA SACHET.

Dried Lemon Peel (ground)	1	pound.
Lemon Geranium Leaves (ground)	4	ounces.
Oil of Lemon Grass	1	drachm.
Oil of Lemon	4	"
Oil of Bergamot	1	ounce.

Mix.

PERFUMERY.

Before entering upon our work of formulæ for the manufacture of perfumery, it will be well to bear in mind the following directions as to the best methods of making extracts from flower pomades.

First.—Pure Cologne Spirit	½ gallon.
Flower Pomade	4 pounds.

(Flower pomade is known to the trade as triple pomade.)

Second.—Place the spirits in a well-stoppered bottle, together with the pomade cut in small pieces, and place the bottle in a water-bath, and apply gentle heat, just sufficient to melt the pomade, and stir with a wooden spatula, or shake well together. By this method, the fatty matter will solidify, and exhibit a granulated appearance, having been thoroughly permeated by the spirits.

Third.—Let the mass stand for five days, but shake occasionally.

Fourth.—Now drain off the liquid extract into another bottle, but if it fall short of a gallon, pour on a sufficiency of alcohol to make up the measure. This is called the First Wash, or Virgin.

Fifth.—By subsequent and similar treatment, a second and even a third quantity of extract may be made, which, although much weaker, will be found suitable for cheap perfumes. The pomade left will then make an excellent hair pomade when bottled.

Herewith are appended several formulæ for extracts, which will be required in our formulæ which follow. Others can be made in a similar manner, by using gums and essential oils.

RONDELETIA.

Otto Lavender (English)	1 ounce.
Otto Cloves	½ "
Otto Bergamot	½ "
Otto Rose Geranium (Turkey)	2 drachms.
Otto Cinnamon (true)	20 drops.
Otto Rose (Virgin)	10 "
Otto Sandal Flav.	1 drachm.
Extract of Musk	2 ounces.
Extract of Orris	4 "
Extract of Vanilla	2 "
Benzoic Acid	1 drachm.
Pure Spirits, sufficient to make	4 pints.

EXTRACT OF VANILLA.

Vanilla Beans (fine quality)	4 ounces.
White Sugar	4 "
Proof Spirit	1 gallon.

Powder the beans and sugar very fine; pack in a percolator, and percolate with the proof spirit.

EXTRACT OF ORRIS.

Orris Root (finely ground)	7 pounds.

Percolate with pure alcohol until one gallon of extract is obtained.

EXTRACT OF TONKA.

Tonka Beans (in coarse powder)	1 pound.

Percolate with alcohol until one gallon of extract is obtained.

JONQUIL.

Extract of Jasmine Pomade	1 pint.
Extract of Tuberose Pomade	1 "
Extract of Orange Flower	½ "
Extract of Vanilla	2 ounces

Mix. The Jonquil is very fragrant.

MAGNOLIA.

Extract of Orange Flower Pomade	1 pint.
Extract of Rose Pomade	2 "
Extract of Tuberose Pomade	½ "
Extract of Violet Pomade	½ "
Otto Citron Zest	3 drops.
Otto Almonds (bitter)	10 "

Mix. This is the genuine, which is found in the perfume shops of London and Paris.

WHITE LILAC.

Extract of Tuberose Pomade	1 pint.
Extract of Orange Flower Pomade	¼ "
Otto Almonds (bitter)	3 drops.
Extract of Civet	½ ounce.

Mix. The civet is only used to give permanence to the perfume of the handkerchief.

CLOVE PINK.

Extract of Jasmine	12 ounces.
Extract of Orris	12 "
Extract of Musk	8 "
Otto Rose (Virgin)	1 drachm.
Otto Clove	2 "
Otto Neroli	1 "
Otto Pimento	10 drops.
Otto Yellow Sandal	2 drachms.
Benzoic Acid	1 "
Pure Spirits, sufficient to make	4 pints.

EXTRACT OF MARY STUART BOUQUET.

Extract of Orange (from Pomade)	3 ounces.
Extract of Rose (from Pomade)	3 "
Extract of Jasmine (from Pomade)	2 drachms.
Tincture of Musk	3 "
Tincture of Civet	3 "
Tincture of Ambergris	3 "
Tincture of Ambrette (1 to 8)	1 ounce.
Tincture of Storax	15 drops.
Tincture of Vanilla	3 drachms.
Oil of Rose Geranium	40 drops.
Oil of Sandal Wood	30 "
Oil of Lemon	2 drachms.
Oil of Ceylon Cinnamon	5 drops.
Oil of Sassafras	2 "
Oil of Bay	3 "
Alcohol	6 ounces.

Mix.

BOUQUET KNIGHT TEMPLAR.

Pure Spirits	7	ounces.
Extract of Orris	3½	„
Oil of Bergamot	3	drachms.
Oil of Patchouli	16	drops.
Oil of Cloves	8	„
Geranium (true)	16	„
Extract of Vanilla	3	drachms.
Extract of Benzoin	2½	„
Extract of Tolu	1¼	„

Mix.

MUSK ROSE.

Extract of Rose (Virgin Pomade)	9	ounces.
Extract of Rose	4½	„
Extract of Orange (Virgin Pomade)	8	„
Extract of Musk	1⅛	„
Oil of Sandal	4	drops.
Tincture of Camphor	4	„

Mix.

NEW MOWN HAY.

Extract of Jasmine Pomade (Third Wash)	32	ounces.
Extract of Tuberose Pomade (Third Wash)	32	„
Extract of Orange Pomade (Third Wash)	32	„
Extract of Rose Pomade (Third Wash)	32	„
New Mown Hay (Compound)	8	„

Mix.

JASMINE.

Extract of Jasmin Pomade (Third Wash)	96	ounces.
Extract of Jasmine (Virgin)	10	„
Oil of Jasmine.	3	„

Mix.

FLOR DE MAYO.

Extract of Jasmine (Virgin Pomade)	3	ounces.
Extract of Jasmine (Second Wash Pomade)	3	„
Extract of Orange (Virgin Pomade)	3	„
Extract of Orange (Second Wash)	2	„
Extract of Tuberose (Second Wash)	3	„
Extract of Tuberose (Virgin)	2	„
Extract of Musk (Compound)	2	„
Oil of Bergamot	10	drops.
Oil of Neroli	2	„
Extract of Musk	1	drachm.
Extract of Ambergris	1	„
Extract of Civet	1	„
Extract of Styrax	15	drops.
Extract of Tolu	1	drachm.

Mix.

BOUQUET I. O. O. F.

Pure Spirits	16	ounces.
Oil of Lavender	½	drachm.
Oil of Cloves	¼	„
Oil of Rose	½	„
Oil of Bergamot	1	ounce.
Extract of Musk	4	„
Extract of Vanilla	4	„
Extract of Ambergris	4	„
Extract of Rose (Virgin Pomade)	8	„
Extract of Orris	6	„

Mix.

POSY.

Extract of Rose (Virgin Pomade)	8	ounces.
Extract of Orange (Virgin Pomade)	4	„
Extract of Jasmine (Virgin Pomade)	8	„
Extract of Musk	4	„
Oil of Rose	¼	drachm.

Mix.

ORANGE FLOWERS.

Extract of Orange (Virgin Pomade)	8	ounces.
Extract of Orange (Second Wash)	8	„
Extract of Civet	¼	drachm.

Mix.

LUCCA BOUQUET.

Triple Extract of Roses	20	fl. ounces.
Extract of Jasmine	20	„ „
Extract of Jonquil	20	„ „
Extract of Violets	10	„ „
Extract of Ambergris	10	„ „
Oil of Neroli	1½	„ „
Otto of Roses	1	„ „
Oil of Lavender	½	„ „

Mix.

PEARL OF SAVOY.

Triple Extract of Roses	24	fl. ounces.
Triple Extract of Jasmine	20	„ „
Triple Extract of Violets	16	„ „
Oil of Cedrat	3	drachms.
Oil of Citron	3	„
Oil of Neroli	2½	„
Oil of Cinnamon	1	„
Extract of Musk	3	„
Extract of Ambergris	2	„

Mix.

SWEET GEM OF EDEN.

Extract of Jasmine	20	fl. ounces.
Extract of Tuberose	16	„ „
Extract of Orange Flowers	4	„ „
Extract of Jonquil	4	„ „
Triple Extract of Roses	4	„ „
Extract of Acacia Flowers	4	„ „
Extract of Vanilla	3	„ „
Extract of Civet	1	„ „
Oil of Bergamot	1	„ „

Mix.

SPRING FLOWERS.

Extract of Rose (from Pomade)	1 pint.
Extract of Violet	1 „
Extract of Rose (Triple)	2½ ounces.
Extract of Cassia	2½ „
Otto of Bergamot	2 drachms.
Extract of Ambergris	1 ounce.

Mix. The just reputation of this perfume places it in the first rank of the very best mixtures that have ever been made by any manufacturer.

LILY OF THE VALLEY.

Extract of Tuberose	½ pint.
Extract of Jasmine	1 ounce.
Extract of Orange Flower	2 „
Extract of Vanilla	3 „
Extract of Cassia	¼ pint.
Extract of Rose	¼ „
Otto of Almonds	3 drops.

Mix. Keep this mixture together for a month, and then bottle for sale. It is a perfume that is very much admired.

TUBEROSE.

Extract of Tuberose	24 ounces.
Extract of Musk	4 „
Extract of Jasmine	1 „
Otto of Rose (Virgin)	1 drachm.
Otto of Neroli (super.)	10 drops.
Benzoic Acid	2 drachms.
Pure Spirits, sufficient for	4 pints.

Mix.

JOCKEY CLUB.

Extract of Jasmine	5 ounces.
Extract of Orris	20 „
Extract of Musk	7 „
Extract of Vanilla	1½ „
Otto of Rose (Virgin)	1½ drachm
Otto of Sandal (Flavoured)	1½ „
Otto of Bergamot	2½ „
Otto Neroli (super.)	40 drops.
Benzoic Acid	2 drachms.
Pure Spirits, sufficient for	4 pints.

Mix. In this, as well as in all the following extracts, before adding the last portion of the spirits, replace as much of it with water as the perfume will bear without becoming milky, which will vary from 2 to 8 ounces or more. This addition will make the perfume softer.

YLANG YLANG.

Extract of Tonka	3 ounces.
Extract of Musk	4 „
Extract of Tuberose	4 „
Extract of Cassia	4 „
Extract of Orris	8 „
Otto of Orange (new)	2 drachms.
Otto of Neroli (super.)	½ „
Pure Spirits, sufficient to make	4 pints.

Mix.

TEA ROSE.

Spirits of Rose Pomade	1 pint.
Spirits of Rose (Triple)	1 „
Extract of Rose Leaf (Geranium)	1 „
Extract of Sandal Wood	½ „
Extract of Neroli	¼ „
Extract of Orris	¼ „

Mix.

SWEET PEA.

Extract of Tuberose	½ pint.
Extract of Orange Flower	½ „
Extract of Rose	½ „
Extract of Vanilla	1 ounce.

Mix.

MUSK.

Extract of Musk	1 pint.
Extract of Orris	6 ounces.
Extract of Vanilla	2 „
Extract of Styrax	2 drachms.
Otto of Sandal Flav.	1 „
Otto of Bergamot	2 „
Otto of Neroli (super.)	10 drops.
Otto of Patchouli	12 „
Otto of Lavender (English)	15 „
Otto of Cinnamon (true)	6 „
Pure Spirits, sufficient to make	4 pints.

Mix.

VICTORIA.

Otto of Rose (Virgin)	2 drachms.
Otto of Neroli (super.)	2 „
Otto of Bergamot	4 „
Otto of Coriander	16 drops.
Otto of Pimento	24 „
Otto of Lavender (English)	16 „
Extract of Jasmine	2 ounces.
Extract of Orris	16 „
Extract of Musk	2 „
Benzoic Acid	2 „
Pure Spirits, sufficient to make	4 pints.

WHITE ROSE.

Otto of Rose (Virgin)	2 drachms
Otto of Red Cedar Wood (true)	6 drops.
Otto of Patchouli	4 „
Otto of Orange (fresh)	½ drachm.
Extract of Tuberose	2 ounces.
Extract of Orris	2 „
Extract of Jasmine	2 „
Extract of Musk	2 „
Benzoic Acid	1 drachm.
Pure Spirits (to which 4 ounces of Rose Water has been added), sufficient to make	4 pints.

FLORIDA WATER.

Oil of Bergamot	1 ounce.
Tincture of Benzoin	1 „
Alcohol	4 pints.

Mix. To this may be added any amount of water to suit the grade required.

MAGNOLIA WATER.

Extract of Tuberose	8 ounces.
Extract of Orange Flowers	6 ,,
Extract of Violet	6 ,,
Tincture of Musk	2 ,,
Essence of Cedrat	3 drachms.
Oil of Bitter Almonds	½ ,,
Oil of Rose	20 drops.
Rose Water	3 ounces.
Orange Flower Water	4 ,,
Deodorized Alcohol	5 pints.

Mix and filter.

VIOLET WATER.

Extract of Violet	4 ounces.
Extract of Cassia	2 ,,
Rose Water	4 ,,
Deodorized Alcohol	30 ,,

Mix and shake well together, and filter.

LAVENDER WATER.

Oil of Lavender	1½ ounce.
Oil of Lemon	3 drachms.
Oil of Sage	½ ,,
Oil of Orange Peel (sweet)	1 ,,
Oil of Lemon Thyme	4 ,,
Oil of Nutmeg	1 ,,
Tincture of Benzoin	1 ounce.
Tincture of Musk	½ ,,
Soft Water	1 pint.
Deodorized Alcohol	½ gallon.

Mix.

NANNIE MAY'S COLOGNE.

Oil of Lemon	3 ozs. and 3 drs.
Oil of Bergamot	6 ,, ,, 6 ,,
Oil of Lavender Flowers	1 ,, ,, 1 ,,
Oil of Neroli	5½ drs.
Oil of Rose	1 ,, ,, 1 ,,
Cologne Spirits	4½ gals.
Orange Flower Water	4 pints.
Lundborg's Extract of Musk	1 lb.

Will age faster by being kept in a warm place.

The above is, without doubt, one of the best selling Colognes ever placed upon the market, and if good materials are used, will not fail to give satisfaction.

LOVE'S BOUQUET.

Extract of Rose (treble)	9 ounces.
Extract of Violet	9 ,,
Extract of Jasmine	9 ,,
Extract of Patchouli	¾ ,,
Tincture of Vanilla	1 ,,

Mix.

COLOGNE WATER.

Oil of Lavender Flowers	½ ounce.
Oil of Rosemary	¼ ,,
Oil of Neroli (Bigarade)	1¼ ,,
Oil of Neroli (Petit Grain)	1¼ ,,
Oil of Lemon Peel	1¼ ,,
Oil of Orange Peel	2 ,,
Oil of Bergamot	2½ ,,
Oil of Rose Geranium	½ ,,
Tincture of Storax	2 ,,
Cologne Spirit	26 pints
Orange Flower Water	6 ,,

Mix. Let stand thirty days, and filter.

COLOGNES.

The following formulæ will be found to produce first-rate articles in every particular.

We desire to call attention to the fact, that the oils used in Colognes must be put in about nine-tenths of the spirit, and after standing twenty-four hours, add the water, and, immediately after, add the rest of the spirit. The water must be lukewarm. Always filter through paper, with a little powdered carbonate of magnesia, if necessary. Always use pure, fresh oils.

OIL OF COLOGNE.

Oil of Bergamot	4 ounces.
Oil of Rose	1 drachm.
Oil of Neroli	1 ,,
Oil of Lemon	½ ounce.
Oil of Geranium Rose	2 drachms.
Oil of Lavender	2 ,,

Mix.

GERMAN COLOGNE.

Cologne Spirit	3 quarts.
Oil of Bergamot	2 ounces.
Oil of Cedrat	1½ ,,
Oil of Lemon	1½ ,,
Warm Water	1 quart.

Mix.

FARINA COLOGNE.

(Artificial.)

Cologne Spirit	3 pints.
Water (distilled)	1 ,,
Oil of Bergamot	1 ounce.
Oil of Orange	½ ,,
Oil of Neroli	3 drachms.

Mix. The fragrance of this is little inferior to the genuine article.

GERMAN COLOGNE.

(*Said to be Hoyt's.*)

Cologne Spirit	1 gallon.
Orange Flower Water	32 ounces.
Oil of Rose	6 drops.
Oil of Bergamot	1 ounce.
Oil of Cedrat	2 drachms.
Oil of Orange	1 ounce.
Oil of Rosemary	1 drachm.

Mix.

FARINA'S GERMAN COLOGNE.

(*Genuine.*)

Fresh Sage Leaves	6 drachms.
Fresh Thyme Leaves	6 "
Fresh Balm Leaves	12 ounces.
Fresh Peppermint	12 "
Fresh Wormwood Leaves	1 "
Fresh Violets	1 "
Fresh Rose Leaves	2 "
Fresh Lavender Flowers	2 "
Fresh Orange Flowers	4 drachms.
Nutmegs	4 "
Cinnamon	4 "
Calamus	4 "
Angelica Root	4 "
Lemon Peel	22 "
Orange Peel	22 "
Brandy	4 gallons.

Macerate forty-eight hours, distil 18 pints of spirits, and add

Oil of Lemon	12 drachms.
Oil of Citron	12 "
Oil of Melissa	12 "
Oil of Lavender	12 "
Oil of Neroli	4 "
Oil of Jasmine	8 "
Oil of Bergamot	12 ounces.

Macerate three weeks, and filter.

COMMON COLOGNE.

Oil of Lavender	1½ ounce.
Oil of Rosemary	½ "
Oil of Lemon	1 "
Oil of Cinnamon	20 drops.
Oil of Alcohol	1 gallon.

Mix and filter.

FARINA COLOGNE, No. 2.

Oil of Neroli	5 drachms.
Oil of Bergamot	1 ounce.
Pure Alcohol	6 pints.
Water	2 "

Mix.

IMPERIAL COLOGNE.

Oil of Bergamot	2 ounces.
Oil of Neroli	2 drachms.
Oil of Lavender	2 "
Oil of Ceylon Cinnamon	1 drop.
Extract of Jasmine	4 ounces.
Tincture of Musk	1 "
Otto of Rose	8 drops.
Extract of Millefleurs	4 drachms.
Benzoated Spirits	3 ounces.
Soft Water	2 pints.
Cologne Spirit	1 gallon.

Mix.

WHITE ROSE COLOGNE.

Extract of Rose Pomade (Third Wash)	1 gallon.
Pine Spirits	32 ounces.
Oil of Rose	2 drachms.
Extract of Violet (Third Wash)	5 ounces.
Extract of Jasmine (Third Wash)	2½ "
Extract of Musk (Third Wash)	2 "
Tincture of Camphor	12 drops.
Oil of Patchouli	1 drachm.

Mix.

VERBENA COLOGNE.

Pure Spirits	96 ounces.
Extract of Orange Pomade (Third Wash)	32 "
Extract of Verbena (Compound)	8 "

Mix.

VIOLET COLOGNE.

Extract of Violet Pomade (Third Wash)	32 ounces.
Extract of Jasmine Pomade (Third Wash)	32 "
Extract of Cassia Pomade (Third Wash)	32 "
Extract of Rose Pomade (Third Wash)	32 "
Extract of Musk Pomade (Third Wash)	4 drachms.

Mix.

COLOGNE WATER.

Oil of Bergamot	8 ounces.
Oil of Lemon	3 "
Oil of Orange	2 "
Oil of Rosemary Flower	1 "
Oil of Neroli (Bigarade)	2 "
Oil of Neroli (Petit Grain)	2 "
Oil of Cloves	4 drachms.
Extract of Orange Flower	10 ounces.
Tincture of Orris Root	4 "
Tincture of Benzoin	4 "
Pure Spirits	6 gallons.
Orange Flower, q. s.	

Mix. This is a very fine preparation, one of the very best in use.

JOCKEY CLUB COLOGNE.

Extract of Jasmine Pomade (Third Wash)	1 gallon.
Extract of Rose	8 ounces.
Extract of Orange	10 ,,
Extract of Jockey Club (Compound)	8 ,,
Extract of Cloves	2 ,,

Mix.

EAU DE COLOGNE.

Pure Spirits	6 gallons.
Otto of Neroli (Petit Grain)	2 ounces.
Otto of Neroli (Petale)	$\frac{1}{4}$,,
Otto of Rosemary	2 ,,
Otto of Orange Peel	4 ,,
Otto of Lemon	4 ,,
Otto of Bergamot	4 ,,

Mix.

GERANIUM ROSE COLOGNE.

Extract of Cassia Pomade (Third Wash)	32 ounces.
Pure Spirits	4 ,,
Extract of Geranium Rose (Compound)	8 ,,

Mix.

BEST COLOGNE WATER.

Oil of Bergamot	2 ounces.
Oil of Neroli	2 drachms.
Oil of Jasmine	$\frac{1}{2}$ ounce.
Oil of Garden Lavender	2 drachms.
Oil of Cinnamon	1 drop.
Benzoated Tincture	3 ounces.
Tincture of Musk	$\frac{1}{2}$,,
Pure Spirits	1 gallon.
Rose Water	2 pints.

Mix.

PORTUGAL COLOGNE.

Oil of Orange Peel	8 ounces.
Oil of Lemon	2 ,,
Oil of Bergamot	1 ,,
Oil of Rose	2 drachms.
Alcohol (pure)	1 gallon.

Mix.

LONG BRANCH COLOGNE.

Oil of Bergamot	8 ounces.
Oil of Lemon	3 ,,
Oil of Orange	2 ,,
Oil of Rosemary Flowers	1 ,,
Oil of Neroli (Bigarade)	2 ,,
Oil of Petit (Grain)	2 ,,
Oil of Cloves	4 drachms.
Extract of Orange Flowers	10 ounces.
Tincture of Orris Root	4 ,,
Tincture of Benzoin	4 ,,
Alcohol (deodorised)	6 gallons.
Orange Flower Water	sufficient.

Dissolve the oils in $5\frac{1}{2}$ gallons of the alcohol; add the extracts and tinctures, and lastly the orange flower water, by small portions, until the mixture acquires a slight milky tint, that no longer disappears on shaking; then add the remaining alcohol, set aside for three or four weeks, and filter through paper.

ORANGE COLOGNE.

Extract of Orange Pomade (Third Wash)	96 ounces.
Oil of Orange (Portugal)	2 ,,
Extract of Orange Flower (Compound)	8 ,,

Mix.

GOLDEN BELL COLOGNE.

Pure Spirits	2 quarts.
Oil of Lemon	5 drachms.
Oil of Bergamot	4 ,,
Oil of Orange (Portugal)	$3\frac{1}{2}$,,
Oil of Neroli	$\frac{3}{4}$,,
Oil of Neroli (Petit Grain)	$\frac{1}{2}$,,
Oil of Rosemary	$\frac{1}{2}$,,
Oil of Lavender	25 drops.
Oil of Cloves	3 ,,
Warm Water	1 pint.

Mix.

JASMINE COLOGNE.

Extract of Jasmine Pomade (Third Wash)	96 ounces.
Extract of Jasmin (Virgin)	10 ,,
Oil of Jasmine	3 ,,

Mix.

POISONS AND THEIR ANTIDOTES.

Poisons are substances of an animal, a vegetable, or a mineral nature, which produce effects deleterious to the animal economy, when they are taken into the stomach in certain doses; and, in some instances, even when they are applied to the surface of the body. Many poisonous substances, however, are daily employed as medicines, and with the best results when they are administered in proper doses, and with due precaution. Writers, who professedly treat of poisons, have arranged the substances which they regard as such, according to their effect on the animal economy. They are generally classed as *Irritant-Narcotic* and *Narcotic-Irritants.*

Narcotic poisons have their operations confined to the brain and spinal marrow, causing headache, dizziness, sleepiness, paralysis, and occasionally lockjaw.

Irritant poisons, for the most part, belong to the mineral kingdom. They produce, in ordinary doses, speedy vomiting and purging, accompanied by intense pain in the abdomen.

Narcotic-Irritants, as the name implies, have a compound action. Soon after being swallowed they give rise to diarrhœa and vomiting, and, sooner or later, they produce the same effect as the narcotic poisons—stupor, paralysis, etc. They are all derived from the vegetable kingdom.

Every person ought, in some measure, to be acquainted with the nature and cure of poisons. They are generally taken unawares, and their effects are often so sudden and violent as not to admit of delay, or allow time to procure the assistance of physicians.

Happily, indeed, no great degree of medical knowledge is here necessary; the remedies for most poisons being generally at hand, or easily obtained, and nothing but common prudence needful in the application of them. The vulgar notion, that every poison is cured by some counter-poison, as a specific, has done much hurt. People believe they can do nothing for the patient unless they know the particular antidote to that kind of poison which he has taken; whereas, the cure of all poisons taken into the stomach, without exception, depends chiefly on discharging them as soon as possible.

There is no case wherein the indications of cure are more obvious. Poison is seldom long in the stomach before it occasions sickness, with an inclination to vomit. This shows plainly what ought to be done. Indeed, common sense dictates to every one, that if anything has been taken into the stomach which endangers life, it ought immediately to be discharged. Were this duty regarded, the danger arising from poisons might generally be avoided. The method of prevention is obvious, and the means are in the hands of every one.

Poisons either belong to the animal, vegetable, or mineral kingdoms.

Mineral poisons are commonly of an acrid or corrosive quality, as arsenic, cobalt, the corrosive sublimate of mercury, etc.

Those of the vegetable kind are generally of a narcotic or stupefactive quality, as poppy, hemlock, henbane, berries of the deadly nightshade, etc.

Arsenic is the most common of the mineral poisons; and as the whole of them are pretty similar, both in their effects and method of cure, what is said with respect to it will be applicable to every other species of corrosive poison.

When a person has taken arsenic, he soon perceives a burning heat, and a violent pricking pain in his stomach and bowels, with an intolerable thirst, and an inclination to vomit. The tongue and throat feel rough and dry; and if proper means be not soon administered, the patient is seized with great anxiety, hiccoughing, faintings, and coldness of the extremities.

On the first appearance of these symptoms, give immediately from a teaspoonful to a tablespoonful (according to age) of ground mustard, and the same quantity of common salt, in half a pint or less of water, warm or cold, warm being the best, which usually makes the patient vomit almost immediately, and which may be repeated every five or ten minutes. If no mustard is on hand, give large quantities of new milk and salad oil, or oil and warm water, or fresh butter melted and mixed with warm water; or if none of these are at hand, three or four grains of tobacco (a small quid) will usually operate as a ready emetic. Some of these, or other emetics, are to be taken as long as the inclination to vomit continues, or until the stomach has become entirely empty.

Lest there be any remnant of the poison, however small, or its effects, left in the stomach, let the patient take a dose of the best antidote on hand; and if nothing better at hand, give the white of an egg, or a cup of strong coffee.

Should there be any delay, from any cause, in administering an emetic, give immediately a dose of the best antidote you have at hand for the poison taken. It is sometimes best to give an antidote first, and then an emetic, and after thoroughly vomiting, and the stomach has become quieted, give another portion of the antidote. But above all things, give an emetic as soon as possible, as life may depend on a prompt and thorough cleansing out of the stomach.

POISONS—MINERAL AND VEGETABLE.

Arsenic (*Ratsbane*).—Give an emetic; then the white (albumen) of eggs, lime water, chalk and water, or calcined magnesia, and the preparations of iron, particularly hydrate.

Alcohol.—Give an emetic; then dash cold water on the head, and give ammonia (spirits of hartshorn).

Belladonna (*Henbane*).—Give an emetic; then plenty of vinegar and water, or lemonade.

Corrosive Sublimate.—Give a strong solution of pearlash or saleratus, if at hand; if not at hand, give the white of eggs, or wheat flour and water freely, and then give an emetic.

Creosote.—Give the white of eggs, and then an emetic.

Laudanum.—Same as opium, which see.

Mushrooms, when Poisonous.—Give an emetic; then vinegar and water, or either, freely.

Muriatic Acid.—Give an emetic; then calcined magnesia, or soda and water, or saleratus and water, or any alkali.

Nitric Acid (*Aqua Fortis*).—Same as muriatic acid.

Nitrate of Potash (*Nitre-Saltpetre*).—Give an emetic; then sweet oil, or flaxseed tea, or milk and water, freely.

Nitrate of Silver (*Lunar Caustic*).—Give a strong solution of common salt, and then an emetic.

Nux Vomica.—Give an emetic; then brandy.

Opium.—Give an emetic; then strong coffee and acid drinks, and dash cold water on the head.

Oxalic Acid.—Give an emetic; then chalk or magnesia, or soap and water, freely; or these first, and then an emetic.

Prussic Acid.—Give an emetic; cr first give soda and water, or saleratus and water, or any alkali, and then give an emetic, and pour acetate of potash and common salt, dissolved in water, on the head and spine.

Sulphuric Acid.—Same as muriatic acid.

Strychine.—Give an emetic; then oil, lard, or fresh butter, and gum camphor in almond mixture, or pounded and mixed with warm water.

Tobacco.—Give an emetic; then astringent teas, and then stimulants.

For the following poisons emetics are not recommended:

Snake Bite.—If the bite is on a limb, instantly tie a cord tightly above the part bitten, and then apply a cupping-glass on the bite, and bathe it with spirits of hartshorn. Take a dose of sweet oil, drink spirits freely, and take a tablespoonful of the juice of the tops of green horehound three times a day.

Alkalies.—Give ginger.

Ammonia.—Give lemon juice or ginger; then milk and water, or flaxseed tea.

Carbonic Gas.—Remove the patient to the open air, and dash cold water on the head and body; hold hartshorn to the nose, and at the same time rub the chest briskly.

Lead, White Lead, or Sugar of Lead.—Give alum, castor oil, and Epsom salts.

Tartar Emetic.—Give tea made out of galls, Peruvian bark, or white oak bark freely.

Verdigris.—Give the white of eggs and water freely.

White Vitriol.—Give milk and water freely.

NITRE—NITRATE OF POTASSA.

(*An Acid Mineral Poison.*)

Symptoms.—When taken in doses of half an ounce to an ounce, which has too frequently happened from the salt being sold by mistake for sulphate of soda, it excites nausea, vomiting, and hypercatharsis: bloody stools, excruciating tormina of the lower bowels, the sensation of fire in the stomach, laborious respiration, cold extremities, syncope, convulsions, and sometimes death. If the patient live, he may remain paralytic.

Treatment.—Empty the stomach, and dilute freely with milk and bland demulcents, opium and aromatics. Give plenty of flour and water or linseed oil.

CHLORIDE OF TIN.

(*A Corrosive Metallic Poison.*)

Symptoms.—An austere, metallic taste, constriction of the gullet, impeded respiration, violent vomiting, with cramp of the stomach and excruciating colic pains, convulsions, sometimes paralysis and death.

Treatment.—Drink copiously of milk, which appears to decompose the chloride; then excite vomiting, by large draughts of tepid water; warm water-bath; administer opiates.

CHLORIDE OF ANTIMONY.

(*Butter of Antimony.*)

This is a highly corrosive, poisonous liquid, varying from a light yellow to a dark red colour.

Symptoms.—Severe vomiting, cramps, faintness, purging, colicky pains, etc.

Treatment.—Give plenty of strong tea, or an infusion of oak bark, elm, sloe, currant or blackberry bark or leaves.

CARBONATE OF LEAD.

(*An Astringent Metallic Poison.*)

Symptoms.—Obstinate costiveness; violent colic, with retraction of the abdomen; vomiting; the pulse small and hard; laborious breathing, and tremors; the gums assume a blue tinge.

Treatment.—Administer cathartics, particularly castor oil, and sulphate of magnesia combined with opium or extract of hyoscyamus; use the warm bath, and throw up repeatedly injections of mutton broth and demulcents. The patient should dilute very freely with mucilaginous liquids. Some alkaline sulphate, mixed with vinegar, or some weak vegetable acid, such as lemon juice, will prove highly useful. Emetics and the stomach-pump should also be employed. When convalescent, he should live almost entirely on a milk diet. If paralysis of the limbs continue, it should be treated with strychnia.

As the symptoms produced by poisoning by lead put on one of the three forms, irritant poisoning, lead colic, and paralysis, our treatment must be governed accordingly. In cases of irritant poisoning, we should immediately administer diluents holding in solution some sulphate, as of soda, magnesia, or potassa, so that a sulphate of lead may be formed. Vomiting should be excited by sulphate of zinc, tickling the throat, or the contents of the stomach may be evacuated by the stomach-pump. In lead colic, the best remedy is alum, though it is generally treated successfully by means of purgatives and opiates, with venesection, leeching, etc. In lead palsy, strychnine is one of the best remedies.

The action of acetate of lead, and of red oxide of lead or litharge, on the animal economy, is nearly the same as that of the carbonate of lead; consequently the above observations apply to all the salts of lead, which, as I have already said, are converted into the carbonate, after being taken into the stomach.

NITRATE OF SILVER.

(*A Corrosive Metallic Poison.*)

Symptoms.—Nearly the same as those produced by corrosive sublimate; in general, the pain of the stomach is more severe; greatly embarassed respiration.

Tests.—If the poison has been taken in solution in water, it is detected by the arsenious acid mixed with ammonia, precipitating a yellow arsenite of silver. A stick of phosphorus placed in it precipitates the silver in a metallic state.

Treatment.—Administer, instantly, a strong solution of common salt, to form an insoluble chloride of silver in the stomach. Then evacuate the stomach by an emetic, and if symptoms of inflammation nevertheless supervene, employ tepid baths and emollient fomentations and clysters.

OPIUM.

Symptoms.—Drowsiness and stupor, which are followed by delirium, pallid countenance, sighing, deep and stertorous breathing, cold sweats, sleepiness, death.

Treatment.—If you cannot get drugs, use mustard and warm water, salt and water; after vomiting, give plenty of very strong coffee, put a mustard plaster round the calf of each leg, and if cold and sinking, give a good quantity of spirits and water. Keep the patient roused till the effects have passed off, by beating the soles of the feet; dash cold water in the face. Remember, if the patient goes to sleep, at this stage, it will be the sleep of death.

SALIVA OF THE RABID DOG.

Symptoms.—These occur at a very uncertain interval after the bite, generally between the twentieth day and three or four months, sometimes not till after several years. The first symptoms are usually a sense of pain and uneasiness in the seat of the wound, which assumes a red and inflamed appearance—anxiety, languor, restlessness, spasms, horror, disturbed sleep, difficult respiration, and shuddering at the slightest breath of air, succeed, and are soon increased. Violent convulsions affect, at times, the whole body, distorting the muscles of the face. The eyes are red and protruded, the tongue swells, and sometimes hangs out of the mouth, while there is a copious secretion of viscid saliva; there is pain in the stomach, vomiting often, of bilious fluids; difficulty, or often inability of swallowing, and a sense of horror whenever liquids are seen; glassy appearance of the eyes; death.

Treatment.—The bitten part should be immediately cut out, and a running sore made by caustic repeatedly applied. Even after the wound has healed, the parts should be removed by the knife, and caustic applied, making an ulcer, which should be allowed to heal by granulation. Suction by the mouth should never be neglected, and bleeding should be promoted by the application of warm water. The wound should be covered for some days with a warm poultice. If convenient, exhausted cups should be applied. After hydrophobia has supervened, no treatment will probably succeed.

FOX GLOVE DIGITALIS.

Symptoms.—Giddiness, impaired vision, sickness, hiccough, cold sweats, delirium, syncope, convulsions, death.

Treatment.—Administer cordials, brandy, whisky; apply a blister to the pit of the stomach; opium, strong coffee; keep the body in motion.

PHOSPHORUS.

(*A Corrosive Poison.*)

Symptoms.—Phosphorus, taken even in moderate quantities, produces immediate death; and as it has been exhibited as a remedy, in this manner it may prove poisonous. The symptoms are violent pain of the stomach, with a hot alliaceous taste in the mouth; great excitement of the arterial system, and horrible convulsions, which are the forerunners of death.

Treatment.—Dilute largely, so as to fill the stomach with liquid, by which the combustion of the phosphorus is impeded, and vomiting induced, without increasing the irritation of the stomach.

Magnesia, mixed with the fluid, neutralises the acid. Give chalk or whiting; or even flour, stirred in. Give no oil or fat of any description.

RATTLESNAKE POISON.

Symptoms.—Quick pulse, impeded respiration, sudden depression of strength in the wounded limb extending over the whole body; convulsions; death.

Treatment.—Tie a hankerchief or rope very tight above the bitten part; suction of the wound; the application of cupping-glasses; cauterisation by hot irons or caustics. Administer internally ammonia, olive oil, and whisky.

NUX VOMICA.

Symptoms.—Sensation of inebriety, dizziness, twitching of the muscles of the mouth, stiffness of the arms and limbs, extreme difficulty of breathing with excruciating pain.

Treatment.—Evacuate the stomach and bowels, and then dilute freely with vinegar and water and other acidulous drinks, cold baths, strong coffee, tannin, purgatives, spirits of camphor.

LAUDANUM.

Symptoms.—Stupor, pulse small, weak and irregular; skin warm and livid, pupils contracted in the early stage, smell of opium in the breath.

Treatment.—Cold affusions to the head, strong coffee, tannic acid, sulphate of zinc. Keep the patient in continual motion; flap the surface of the body with wet towels.

COLCHICUM.

(*Meadow Saffron.*)

An acro-narcotic poison, deriving its powers from colchici.

Symptoms.—Sicknsss and vomiting, violent purging, rapid sinking of the pulse and cold sweats.

Treatment.—Evacuate the contents of the stomach with a tablespoonful of mustard and water, injections of hot water, blisters to the pit of the stomach. Rub the spine briskly with a stimulating liniment. Cold applications to the head, afterwards cordial stimulants.

VERDIGRIS.

Symptoms.—Colic pains, constant vomiting and purging, violent pains in the throat, with tension of the epigastrium. Indeed, all the symptoms of irritant poisoning.

Treatment.—Magnesia, carbonate of soda, and emetic, if necessary.

VERMIN POISON.

Various powders for destruction of vermin, etc., contain arsenic, and are frequent sources of poisoning.

The symptoms come on about half an hour after the dose has been taken, and are: Nausea and burning pain in the stomach, violent vomiting, intense thirst, purging and pain in the epigastrium, on pressure. The treatment is, to excite vomiting as much as possible by the administration of a scruple of sulphate of zinc and ipecacuanha, and plenty of warm water, and to apply the stomach-pump as soon as possible. The hydrated sesquioxide of iron, given in large quantities, is also useful; and a mixture of linseed meal, castor oil and water, made to the consistency of molasses, may also be given to protect the stomach.

TARTAR EMETIC.

Tartar emetic has been taken in mistake for Epsom salts.

Symptoms.—A livid countenance, violent pain in the stomach, spasmodic contractions of the muscles, particularly of the arms, and violent abdominal pains.

Treatment.—Excite vomiting, strong tea, quinine, gall nuts.

STRAMONIUM.

Symptoms.—Vomiting, giddiness, delirium, sometimes furious madness, stupor, convulsions, paralysis, cold sweats, and death.

Treatment.—Administer tannic acid, cold affusions to the head, and strong coffee. Keep the patient in continual motion, the surface of the body being flapped with wet towels.

BLUE VITRIOL.

(*Sulphate of Copper.*)

When taken, it causes such severe vomiting as to be an antidote to itself. When this is not effectual, then pains in the abdomen, purging and convulsions take place.

Treatment.—Encourage vomiting with warm water and give milk, flour and water, coffee, and white of an egg.

MURIATIC ACID.

(*A Corrosive Mineral Poison.*)

Symptoms.—Sensation of burning in the throat, the œsophagus, and the stomach ; styptic taste in the mouth ; great thirst ; the eyes red and sparkling ; the pulse very frequent and tense ; the skin hot and dry ; the tongue red and glazed ; the lips black ; vomiting of blood and yellow matter, having the pungent colour of the acid ; cold sweats, delirium, and death. These are also the symptoms attending poisoning by any of the mineral acids ; but it is said by Orfila, that when hydrochloric acid is the poison, a thick white fume of a sharp penetrating odour, similar to that exhaled by the acid, issues from the mouth.

Treatment.—Administer calcined magnesia, flax seed tea, lime and demulcent drinks ; soapsuds, bicarbonate of soda.

SULPHURIC ACID.

Symptoms.—Intense burning pain in the throat, gullet, and stomach, vomiting of coffee grounds mixed with shreds of mucus and blood.

Treatment.—Lime, magnesia, bicarbonate of soda, soapsuds, infusion of wood ashes, white of eggs, oil, or any mild diluent.

CANTHARIDES.

Symptoms.—Nausea, vomiting and purging ; the matter ejected in either case being frequently bloody and purulent, writhing colic, great heat and irritation of the bladder and urinary organs.

Treatment.—Copious dilution with milk and demulcent fluids, the warm bath, opiate, frictions ; camphor internally administered and externally applied.

CORROSIVE SUBLIMATE.

(*A Corrosive Metallic Poison.*)

Symptoms.—An acrid, styptic, metallic taste, with the sensation of fulness and burning in the throat ; copious salivation, but not always ; tearing pains of the stomach and intestines ; nausea, frequent vomiting of a fluid, occasionally mixed with blood ; diarrhœa, convulsions and death.

Treatment.—Give large quantities of white of egg, diluted in water, in repeated doses. The albumen decomposes the corrosive sublimate, and reduces it to a state of calomel, and the protoxide, which, acting on the bowels, carries itself off by purging. The poison is also reduced to calomel by a mixture of soap and the gluten of wheat flour. The warm bath may also be employed ; and during convalescence the patient should subsist altogether on broths, milk and demulcent fluids.

CREOSOTE.

(*An Acrid Poison.*)

Symptoms.—It operates as a powerful topical excitant, causing inflammation of the tissue with which it comes in contact, and destroying life by the nervous sympathy it induces.

Treatment.—Administer freely white of eggs, then give direct emetics. The prostration is to be counteracted by ammonia and other stimulants, oleaginous and mucilaginous drinks.

CARBONIC ACID GAS.

This gas is often extricated by burning charcoal in close rooms, so as to produce suspended animation and death. As it is also very heavy, it remains in fermenting vats and beer cellars long after the liquor has been drawn off or removed, so as to destroy individuals who incautiously enter them.

Symptoms.—Great drowsiness, difficult respiration. The features appear swollen and the face bluish, as in cases of strangulation.

Treatment.—Remove the patient into the open air, and place him on his back, with his head elevated ; dash cold water over the body and inflate the lungs with common air by means of bellows, or according to the directions laid down in the article on Drowning.

ARSENIC—ARSENIOUS ACID.

(*A Corrosive Mineral Poison.*)

Symptoms.—Metallic, austere taste, constant spitting of saliva, constriction of the pharynx and gullet, nausea and vomiting, sometimes of a brown, mucous matter, a sensation of great heat in the throat, severe pain in the stomach, severe griping and purging, difficult breathing, prostration of the strength and paralysis of the feet and hands, delirium, convulsions, bloody urine, and death.

Treatment.—If vomiting does not already exist as a direct effect of the poison, administer sulphate of zinc and linseed tea. When sulphate of zinc cannot be procured, administer two teaspoonfuls of mustard in a glass of water. Give lime water, large draughts of oil, sugar and water, charcoal, chalk, and if a drug store is near, procure hydrated sesquioxide of iron, and administer about 1 tablespoonful, adding about 20 drops of liquor ammonia to each dose, which may be often repeated.

ACONITE.

Symptoms.—Numbness at the point of the tongue, with a sensation of burning in the throat, followed by tremors and a feeling of coldness in those parts, sickness and violent vomiting, giddiness, cold sweats, delirium, and convulsions which terminate in death.

Treatment.—Administer freely acidulous fluids and cordials. Cause vomiting by administering a tablespoonful of mustard in water, plenty of strong coffee, without milk or sugar.

MORPHIA.

Symptoms.—Morphia in poisonous doses causes nearly the same symptoms as opium; the acetate and hydrochlorate, in doses of 3 to 6 grains, cause headache, vertigo, dimness of sight, contraction of the pupils, vomiting, colic, diarrhœa succeeded by obstinate costiveness, retention of urine, great itching of the skin, sometimes accompanied with a papular eruption and profuse sweats, convulsions, sometimes of a tetanic, sometimes of an epileptic, character. The acetate in particular, causes tetanic twitching, resembling electric shocks. This is not a fatal symptom; but in these large doses the symptoms of this poison terminate in death.

Treatment.—Strong coffee, without milk or sugar, after which produce vomiting. Mustard mixed in warm water, or grease in warm water. Keep the body in constant motion.

CYANIDE OF MERCURY.

Symptoms.—Weight and pain in the head, giddiness, nausea, quick pulse, loss of muscular power, foaming at the mouth, strong odour of bitter almonds.

Treatment.—Cold affusions to the head and spine; carbonate of ammonia internally; inhalation of chlorine gas; small doses of chloride of lime or soda.

The chemical antidote, if there is time for its administration, is the peroxide of iron.

BELLADONNA.

Symptoms.—A sense of great dryness and constriction of the pharynx and œsophagus; sickness, vertigo, dilated pupils and dimness of sight; laughter, delirium, redness and tumefaction of the face; convulsions. The stomach and bowels become sometimes so paralysed, that vomiting can scarcely be produced by the most powerful emetics; and death follows.

Treatment.—Give emetics of sulphate of zinc or of copper; then evacuate the bowels by active purgatives and clysters; and follow these by large doses of vinegar and water, or other vegetable acids. The previous use of vinegar has been recommended, and it is said the emetics act with more certainty after its use; after the vomiting, strong coffee proves very efficacious.

PRUSSIC ACID.

Symptoms.—If the quantity be large, death takes place instantly, but smaller quantities produce giddiness, loss of sight and fainting. The peculiar smell is often perceptible about the mouth.

Treatment.—Give ammonia and water and apply a bottle of smelling salts to the nose, dash cold water on the face and give stimulants, as whisky, etc.

HEMLOCK.

A narcotic vegetable poison, deriving its poisonous properties from an alkaline principle called Conia.

Symptoms.—Sickness, difficulty of respiration, great anxiety, vertigo, delirium, which often rises to maniacal phrensy, dilatation of the pupils, stupor, convulsions and death.

Treatment.—Take 20 grains of sulphate of zinc and 2 tablespoonfuls of water, and administer at once. Make your patient vomit; pour cold water on the head, give freely of vinegar and water or any other acidulous liquid.

STRYCHNIA.

Symptoms.—This is lockjaw; the body is bent backward like a bow so as to rest on the feet and head only.

Treatment.—Empty the stomach by an emetic, then give linseed tea, barley water, and laudanum to relieve the spasms; about 30 drops of the tincture to an adult. Give plenty of powdered charcoal suspended in water. If the spasms have set in, chloroform should be given, or large doses of chloral.

CHLOROFORM.

In threatened death from chloroform, the tongue should be immediately pulled forward with hooked forceps, and the stomach forcibly pressed up; artificial respiration should be resorted to without delay, and galvanism; the patient should be placed in a current of cold air, and the chest and extremities flapped with a wet towel. The head, if the face is pale, should be lowered; if turgid, should be raised. Artificial respiration should be kept up for a long period, even after all appearance of life has ceased.

POISONOUS INSECTS.

(*Tarantula, Scorpion, Hornet, Wasp, Bee, Gnat, Gad-Fly, Sand-Fly, etc.*)

In general, the sting or bite of these insects occasions only a slight degree of pain and swelling; but occasionally the symptoms are more violent, and sickness, fever, and occasionally death, result in consequence.

Treatment.—Ammonia and oil may be rubbed on the affected part, and a piece of rag moistened in the same, or in salt and water, may be applied till the pain is removed. Small doses of spirits of ammonia may also be given internally, with warm diluents, or wine and water. The sting may often be removed by making pressure over it with the barrel of a small watchkey.

PROMISCUOUS FORMULÆ.

RED PRECIPITATE.

Bichloride of Mercury . . .	4 ounces.
Water	6 pints.
Liquor of Potassa	28 ounces.

Dissolve the bichloride in the water, add the liquor of potassa, wash the precipitate in distilled water, and dry by a gentle heat.

AQUA FORTIS.

(*For Dyers.*)

Colourless Nitric Acid . . .	10 pounds.
Hydrochloric Acid	1 „

Mix carefully. The nitric acid should be 1·17 sp. gravity, and the hydrochloric acid 1·19.

TO PULVERISE CAMPHOR.

Camphor may be beaten in a mortar for some time without being reduced to powder; but if it be broken with the pestle and then sprinkled with a few drops of the spirits of wine, it may be readily pulverised. By adding water to an alcoholic or ethereal solution of camphor, it is precipitated under the form of an impalpable powder of exquisite whiteness, which may be collected and spontaneously dried on a filter. The addition of a minute quantity of carbonate of magnesia to the water (say 1 drachm for each 16 ounces of camphor) before mixing it with the camphor solution, will prevent the powdered camphor from hardening again after drying.

TEST FOR ALBUMEN.

A solution of bichloride of mercury, dropped into a fluid containing albumen, occasions a white precipitate. Tannin, or tincture of galls, gives a yellow, pitchy precipitate.

TESTS FOR THE PURITY OF QUININE.

This salt is frequently adulterated with starch, magnesia, gum, sugar, etc. The first three remain undissolved when the salt is digested in spirit; the fourth is dissolved out by cold water, and the last may be detected by precipitating the quinine by liquor of potassa, and dissolving the precipitate in boiling alcohol; cinchona crystallises out as the solution cools, but the quinine remains in the mother liquor.

TESTS FOR THE PURITY OF CHLOROFORM.

1. Its specific gravity must not be less than 1·490, nor more than 1·494, and boil at 140° Fahrenheit.

2. When dropped into water, it sinks in transparent globules, without milkiness.

3. When mixed in a bottle with sulphuric acid, it produces no warmth.

TO TEST THE STRENGTH OF OPIUM.

Take 25 grains of quicklime, made into a milk with water, boil in this 100 grains of opium and filter the solution while hot; saturate the filtrate with dilute hydrochloric acid, and then precipitate the morphia by the addition of liquor of ammonia, any excess of the latter being expelled by heat. Collect the precipitate dry and weigh it; the weight in grains will represent the percentage of morphia in the simple opium tested.

TO TEST THE PURITY OF OPIUM.

Macerate 100 grains of opium for twenty-four hours in 2 fluid ounces of water; filter and express the residue; then precipitate with a solution of ½ ounce carbonate of soda in 2 fluid ounces of cold water; gently heat the precipitate until it fuses, then cool and weigh it. It should weigh at least 10 grains; and when powdered, be entirely soluble in a solution of oxalic acid.

STRONG ETHER.

Ether	3 pints.
Chloride of Calcium	1 ounce.
Lime (in fine powder) . . .	1 „
Water	3 pints.

Mix the ether and the water, and shake them well together, and, when the water has subsided, separate the ether from it, and agitate it well with the chloride of calcium and the lime. After standing for twenty-four hours, decant the ether into a retort, with Liebig's condenser, connected with a receiver, surrounded by ice water, and distil 1½ pint stronger ether, which should be of a specific gravity, not exceeding ·728.

Note.—The vapour of ether is very inflammable, and when mixed with atmospheric air, it forms a violently explosive compound.

TO CHANGE THE STRENGTH OF ALCOHOL.

REDUCTION OF SPIRIT BY WATER.

Rule.—Multiply the given measure by the degree of the weaker spirit, and divide the result by the degree of the stronger or given spirit.

Example.—I wish to make 340 gallons of spirits of 49 per cent., from alcohol of 85 per cent. Multiply 340 by 49, and divide the result by 85. The quotient is 196, the number of gallons of alcohol, at 85 per cent., which, with 134 gallons of water, will make 340 gallons of spirit, of 49 proof.

REDUCTION OF SPIRIT BY SPIRIT OF WEAKER STRENGTH.

Rule.—Multiply the given number of parts of the strong spirit to be reduced, by the difference of its strength and that of the new compound, and divide the result by the difference of the strength of the weaker spirit, and that of the new compound. The quotient will represent the number of parts of weaker spirit necessary to reduce the given number of parts of stronger spirit.

Example.—615 gallons of spirit, of 85 per cent., is to be reduced to 47 per cent. by spirit of 36 per cent. Multiply 615 by 39 (the difference between 86 and 47), and divide the result by 11 (the difference between 36 and 47). The quotient will represent the number of gallons of the weaker spirit necessary for the operation.

RAISING THE PROOF.

Rule.—Multiply the number representing the quantity of spirit to be raised, by the difference of its strength and that of the new compound; divide the product by the difference between the strength of the strong spirit, and that of the new compound. The quotient will indicate the quantity of strong spirit necessary to raise the proof or standard of the given quantity of weaker spirit.

Example.—420 gallons of spirit, of 46 per cent., is to be raised to 49 per cent. by spirit of 85 per cent. Multiply 420 by 3 (the difference between 46 and 43), divide the result by 36 (the difference between 85 and 49), and the quotient will represent the number of gallons of the strong spirit necessary to raise the 420 gallons to 39 per cent.

TO DEODORIZE ALCOHOL.

Alcohol	1 gallon.
Unslacked Lime	4 drachms.
Powdered Alum	2 "
Sweet Spirits of Nitre	1 "

First reduce the lime to a very fine powder, add to it the alum, mix the two powders well together, and pour them into the alcohol. Shake well, add the sweet nitre, and shake again. After the mixture has been kept a week, with occasional agitation, filter it through animal charcoal, when a pure deodorized alcohol will be produced.

WORM PREPARATIONS.

PERRY'S QUAKER VERMIFUGE.

Alexandria Senna	1 pound.
Pink Root	2 "
White Sugar	6 "
Alcohol	1 pint.
Carbonate of Potass.	3 ounces.
Santonin	3 "
Oil of Caraway	1½ drachm.
Oil of Anise	1½ "

Water, to make 1 gallon of Syrup.

INFUSION OF KOUSSO.

(*Tapeworm Remedy.*)

Kousso (in powder)	2 drachms.
Boiling Water	4 ounces.

Digest half an hour in covered vessel, and when cold, drink without being strained. The patient must fast for twelve to twenty-four hours before taking the medicine. If in four to six hours the medicine has not operated, a dose of castor oil should be given.

The above is the adult dose.

To disguise the taste, strong coffee can be used without cream or sugar.

VERMIFUGE EMULSION.

Oil of Wormseed	½ ounce.
Sugar	1 "
Pulverised Gum Arabic	1 "
Aqua Peppermint	10 "

Make emulsion.

Dose.—One teaspoonful four times a day for two days, followed by a laxative; such as castor oil, or Epsom salts.

SWAIM'S VERMIFUGE.

Wormseed	2 ounces.
Valerian (Pulverised)	1½ "
Rhubarb	1½ "
Pink Root	1½ "
White Agaric	1½ "

Boil in sufficient water to yield three quarts of decoction, and add to it thirty drops of oil of tansy, forty-five drops of oil of cloves, dissolved in alcohol one quart.

Mix and filter.

GERMAN WORM TEA.

Manna	1 ounce.
Fennel Seed	½ "
Senna Alex	½ "
Pink Root	½ "
Boiling Water, to make	1 pint.

Macerate drugs with boiling water for one or two hours, and add enough boiling water to make equivalent to that lost by evaporation.

Dose.—Teaspoonful to ½ ounce, according to age.

SANTONINE LOZENGES.

Santonine (fine powder)	½ troy ounce.
Sugar (fine powder)	18 ounces.
Tragacanth (fine powder)	½ "
Orange Flower Water, sufficient.	

Rub the powders together until they are thoroughly mixed, then with orange flower water, a mass to be divided into four hundred and eighty troches. Colour with carmine.

Each lozenge contains about half a grain of santonine.

Dose.—One every three hours until three or four are taken.

VERMIFUGE

Oil of Turpentine	2 drachms.
Oil of Peppermint	2 ,,
Oil of Anise	1 ,,
Castor Oil, to make	1 pint.

Mix. *Dose.*—One or two teaspoonfuls.

VERMIFUGE.

Oil of Wormseed	6 drachms.
Oil of Anise	40 drops.
Oil of Castor	12 ounces.

Mix, and add syrup of rhubarb aromatic. Shake well.

Dose.—Teaspoonful night and morning for a child two years old.

AROMATIC CHALK POWDER.

Cinnamon (in powder)	4 ounces.
Nutmeg	3 ,,
Saffron	3 ,,
Cloves	1½ ,,
Cardamom Seed	1 ,,
Sugar	25 ,,
Prepared Chalk	11 ,,

Mix them thoroughly, pass the powder through a fine sieve, and finally rub it lightly in a mortar. Keep it in a stoppered bottle.

Dose.—Ten to sixty grains.

DYSPEPSIA TABLETS.

Lacto-phosphate of Lime	1½ drachm.
Lacto-phosphate of Magnesia	10 grains.
Lacto-phosphate of Iron	5 ,,
Pepsin	100 ,,
Sub-carbonate of Bismuth	100 ,,
Oil of Mentha Pip.	5 drops.

Dose.—One or two pills. Make into 100 compressed pills.

To prevent rusting of compressed pill moulds: After using, wash thoroughly with water, and dry by passing cotton through the cylinder; then fill the cylinder with absorbent cotton, and wrap it and the base and plunger with the same material and put away.

GELATINE ICE.

Cox's Gelatine	2 ounces.
Water	6 ,,
Glycerine	14 ,,
Oil of Bergamot	20 drops.
Oil of Cloves	10 ,,
Oil of Bitter Almonds	5 ,,

Warm the glycerine and add it to the gelatine previously dissolved in water by means of water-bath. Boil down to 1 pint; while cooling add the essential oils and pour into moulds. The above is a beautiful article.

COUGH CANDY.

Fluid Extract of Seneka	4 fl. drachms.
Fluid Extract of Squills	12 ,, ,,
Fluid Extract of Ipecac	2 ,, ,,
Tincture of Tolu	2 ,, ,,
Tincture of Opium (camphorated)	8 ,, ,,
Oil of Anise Seed	5 drops.
Oil of Wintergreen	8 ,,
Oil of Sassafras	12 ,,
Sugar	12 pounds.

Mix the liquid ingredients together, and give them, with the sugar, to a confectioner, to be made into tablets or lozenges. This is a really fine article.

CHLORODYNE.

Sulphate of Morphia	15 grains.
Chloroform	1 ounce.
Alcohol (stronger)	2 ,,
Fluid Extract of Cannabis Indica	1 ,,
Glycerine	2 ,,
Hydrocyanic Acid (diluted)	15 minims.
Essence of Peppermint	15 ,,

Mix the liquids, and dissolve the morphia in the mixture.

Dose.—Ten drops in water.

DALBY'S CARMINATIVE.

Carbonate of Magnesia	6 ounces.
Carbonate of Potassium	2 drachms.
Sugar	1 pound.
Laudanum	3 ounces.
Water	5 pints.
Oil of Caraway	10 drops.
Oil of Fennel	10 ,,
Oil of Peppermint	10 ,,
Brandy	4 ounces.
Prepared Chalk	2 ,,

Mix. Strength, 1 grain of opium to the ounce.

IMPROVED STYPTIC.

Collodion	100 parts.
Carbolic Acid	10 ,,
Tannin	5 ,,
Benzoic Acid (from the gum)	5 ,,

Mix the ingredients in the order above written until perfect solution is effected. This preparation has a brown colour, and leaves, on evaporation, a strongly adherent pellicle. It instantly coagulates blood, forming a consistent clot, and a wound rapidly cicatrises under its protection.

COMPOSITION POWDER.

Bayberry Root Bark	3 pounds.
Ginger	1½ ,,
Capsicum	3 ounces.
Cloves	3 ,,

Mix.

CAMPHOR ICE AND GLYCERINE.

White Wax	7½ ounces.
Spermaceti	7½ „
Pulverised Camphor	10 „
Pure Tallow	28 „
Olive Oil	2½ „
Glycerine	8 „

Melt the white wax, spermaceti and tallow together; while warm dissolve the camphor in the mixture. Finally add the olive oil and glycerine. Stir, and pour into moulds.

GLYCERATE TAR.

Pine Tar (pure)	1 ounce.
Carbonate of Magnesia	1 „
Glycerine	4 „
Alcohol	2 „
Aqua	10 „

Mix. Dissolve tar in alcohol. Reduce magnesia to powder and add tar and alcohol to magnesia. Triturate thoroughly; add glycerine and water to make 1 pint, and filter.

CLARK'S BLOOD MIXTURE.

Iodide of Potassium	64 grains.
Chloric Ether	4 drachms.
Liquor of Potassa	30 drops.
Water	7½ ounces.

Burnt Sugar, sufficient to colour.

Mix. The chloric ether here mentioned is made by dissolving 1 part, by volume, of chloroform, in 19 parts, by volume, of alcohol.

LOCOCK'S PULMONIC WAFERS.

Lump Sugar	2 pounds.
Starch	2 „
Powdered Gum Arabic	1 „

Make into a lozenge mass, with vinegar of squills, oxymel of squills, and wine of ipecac, equal parts, gently evaporated to one-sixth of their weight, with the addition of from four to five ounces of lactucarium. Divide the mass into half-inch squares, weighing about 7½ grains each when dry.

CHAPMAN'S COPAIBA MIXTURE.

Copaiba	4 drachms.
Sweet Spirit of Nitre	4 „
Powdered Gum Arabic	1 „
Powdered Sugar	1 „
Compound Spirits of Lavender	2 „
Tincture of Opium	1 „
Distilled Water	4 ounces.

Mix.

Dose. A tablespoonful, three times a day.

WHALEY'S DYSPEPSIA CURE.

Nitric Acid (diluted)	80 drops.
Fluid Extract of Conium	2 drachms.
Syrup of Orange Peel	2 „
Fluid Extract of Rhei	½ „
Tincture of Colombo	5 ounces.

Mix.

Dose.—A tablespoonful in water, three times a day, before meals.

LANGDON'S DIARRHŒA MIXTURE.

Tincture of Camphor	2 drachms.
Tincture of Capsicum	1 „
Spirits of Lavender (Compound)	2 „
Tincture of Opium	2 „

Mix.

Dose.—Twenty-five drops in a little sugared water, after each operation.

RHEUMATISM APPLICATION.

Oil of Hemlock	2 ounces.
Oil of Horseradish	2 „
Oil of Celery	2 „
Oil of Pennyroyal	2 „
Oil of Sassafras	2 „
Alcohol, to make	1 gallon.

Mix. The above is a powerful external application in sciatica, rheumatism, neuralgia, etc., and is the preparation sold by a party to physicians throughout the west.

PAIN EXPELLER.

Tincture of Capsicum	25 drachms.
Tincture of Camphor	5 „
Aqua Ammonia	10 „
Alcohol	10 „
Opodeldoc	10 „

Mix.

ERYSIPELAS WASH.

Sugar of Lead	2 drachms.
Plaster of Paris	2 „
Tincture of Opium	2 ounces.
Tincture of Catechu	2 „
Water	12 „

Mix and apply.

COD LIVER OIL WITH QUININE.

Sulphate of Quinine	60 grains.
Pure Oleic Acid	1 ounce.
Cod Liver Oil	31 fl. ounces.
Diluted Sulph. Acid, q. s.	
Distilled Water, q. s.	
Ammonia, q. s.	

Suspend the quinine in 4 ounces of water, dissolve by the careful addition of sulphuric acid, and precipitate with ammonia. Wash the precipitated alkaloid dry, and dissolve it in the oleic acid by the aid of a gentle heat. When solution is effected, add the cod liver oil. The product should measure 32 fluid ounces, and contain 2 grains of the oleate of quinine in each fluid ounce.

TO IMPROVE COAL OIL LIGHT.

Add one-eighth to one-fourth amount of common salt. Makes light more brilliant, prevents smoking, and keeps wick clean.

ARTIFICIAL VENICE TURPENTINE.

Resin Turpentine	equal parts.

Melt the resin, remove from the fire, and add turpentine.

MIXTURE OF LICORICE (COMP.).

Solution of Ext. of Licorice .	1 fl. ounce.
Simple Syrup	5 fl. drachms.
Mucilage of Gum Arabic .	11 ,, ,,
Water, q. s. to make . .	12½ ,, ounces.
Camphorated Tinct. of Opium .	2 ,, ,,
Wine of Antimony . . .	1 ,, ,,
Spirits of Nitrous Ether . .	½ ,, ,,

Mix.

ALLCOCK'S POROUS PLASTER.

India-rubber	1 pound.
Pitch	8 ounces.
Gum Thus	8 ,,
Cayenne Pepper	30 grains.

The last ingredient is to be added to the others previously melted. The mass is spread on muslin or linen perforated with small holes, allowing vent for perspiration and affording increased flexibility.

MORGAN'S ELASTIC PLASTER.

Take thin sheet-rubber and apply to it a coating of Boyton's plaster, namely lead-plaster 94 parts resin 6 parts.

This plaster has the advantage of accommodating itself to all movements of the muscles without curling up or becoming stiff, and has been used with good advantage as a dressing to sores and wounds.

BELFAST GINGER ALE POWDER.

Powdered White Sugar . . .	16 ounces.
Powdered Bicarbonate of Soda .	3½ ,,
Powdered Citric Acid . . .	4½ ,,
Concentrated Essence of Ginger .	1½ ,,
Concentrated Essence of Cayenne .	4 drachms.
Concentrated Essence of Lemon .	40 drops.

Dry the soda, acid and sugar very carefully; before drying the sugar, incorporate with it the essences thoroughly, to which a small quantity of caramel may be added as colouring.

OWEN'S COMPOUND EXTRACT OF BUCHU

Buchu Leaves (in coarse powder) .	12 ounces.
Uva Ursi (in coarse powder) . .	4 ,,
Alcohol	3 pints.
Water	6 ,,

Treat the leaves by maceration and displacement, first with a portion of the alcohol, and then with the remainder mixed with the water; evaporate the resulting liquid by a gentle heat to three pints, and to this add—

Sugar	2½ pounds.

Continue the heat till the sugar is dissolved, and after removing from the fire, add—

Oil of Cubebs . . .	1 fl. drachm.
Oil of Juniper . . .	1 ,, ,,
Spirits of Nitric Ether . . .	12 ,, ounces.

Previously mixed with a portion of the alcohol, mix the whole together, and shake well.

Dose.—Teaspoonful.

SWEET TINCTURE OF RHUBARB.

Rhubarb (bruised)	2 ounces.
Licorice Root (bruised) . . .	2 ,,
Anise Seed (bruised) . . .	1 ,,
Sugar	1 ,,
Alcohol (diluted)	2 pints.

Macerate fourteen days, express and filter.

Dose.—Teaspoonful to tablespoonful.

COLOURLESS TINCTURE OF IODINE.

Tincture of Iodine	14 ounces.
Glycerine	6 ,,
Hyposulphite of Soda . . .	1½ ,,

Dissolve the hyposulphite of soda in the glycerine, and triturate with the tincture of iodine. Allow to stand a few hours, and filter.

External application.

DESHLER'S SALVE.

Resin	12 ounces.
Suet	12 ,,
Yellow Wax	12 ,,
Turpentine	6 ,,
Flax Seed Oil	7 ,,

Melt them together, strain the mixture through muslin, and stir it constantly until cold.

PETIT'S EYE SALVE.

White Precipitate	3 ounces.
Oxide of Zinc	4 ,,
Benzoic Acid	2 drachms.
Sulph. of Morphia	48 grains.
Oil of Rosemary	20 drops.
Olive Oil	2 pounds.
Spermaceti	12 ounces.
White Wax	4 ,,

Melt the spermaceti, white wax and olive oil together; rub the white precipitate, the oxide of zinc, benzoic acid and sulphate of morphia with a portion of the warm mixture; add together, and finally add the oil of rosemary. Stir till cold. This is a splendid article.

GLYCERINE CREAM.

Spermaceti	2 ounces.
White Wax	6 drachms.
Oil of Almonds	8 ounces.

Melt, strain and perfume, then add glycerine, 2 ounces. Rub in mortar till white.

BATEMAN'S DROPS.

Diluted Alcohol	1 gallon.
Red Saunders (rasped) . . .	½ ounce.

Digest for twenty-hours, and add—

Opium (in powder)	½ ounce.
Catechu (in powder) . . .	½ "
Camphor	½ "
Oil Anise	1 drachm.

Digest ten days, then filter. This preparation contains about 1 grain each of opium, catechu, and camphor, to the ½ ounce, corresponding in strength with camphorated tincture of opium.

TURLINGTON'S BALSAM OF LIFE.

Alcohol	4 pints.
Benzoin	6 ounces.
Liquid Storax	2 "
Socotrine Aloes	½ "
Peruvian Balsam	1 "
Myrrh	½ "
Angelica	3 drachms.
Balsam Tolu	2 ounces.
Extract of Licorice	3 "

Digest for ten days, and strain.

IMPROVED CITRATE OF MAGNESIA.

Carbonate of Soda .	4½ ounces.	
Acid Tartaric . .	3 "	and 3 drachms.
Syrup of Lemon .	12 "	
Soda Bicarbonate .	30 grains to each bottle.	

Dissolve the carbonate of soda in aqua two pints, in one vessel, and in another, dissolve tartaric acid in one pint of water; when effervescence ceases, add together. When effervescence ceases the second time, add eight ounces to each bottle of the solution; then add two ounces of the syrup of lemon, and thirty grains of the bicarbonate of soda; cork immediately. The above will make one dozen bottles.

EXTRACT OF MALT AND COLTS-FOOT.

Colts-foot Leaves	3 ounces.
Spotted Lungwort	3 "
Licorice	2 "
Alcohol (diluted), q. s.	
Stoned Raisins	1 pound.
Extract of Malt, to make	3 gallons.

Macerate the drugs and stoned raisins for three days in diluted alcohol, then transfer to a percolator, and obtain one pint of percolate; then add the extract of malt. Mix.

Dose.—One tablespoonful to half wineglass of water.

OIL STONE.

Oil of Seneka	1 pint.
Spirits of Turpentine . . .	3 "
Barbadoes Tar	1 "

Mix.

FRENCH COLD CREAM.

A French pharmaceutical contemporary gives the following formula for the preparation of this cosmetic, which is said to be an exact imitation in its propertie of a product of unknown composition, highly esteemed:—

Quince Mucilage	20 ounces.
Almond Soap	½ "
Stearic Acid	5 "
Glycerine	1 "

It is stated that this preparation is not liable to become rancid, which is a serious drawback, with many inferior preparations given in our text-books.

THIELEMANN'S SWEDISH CHOLERA MIXTURE.

Oil of Peppermint	4 drachms.
Alcohol	4 ounces.
Wine of Opium and Saffron . .	1½ "
Tincture of Ipecac	4 "
Tincture of Valerian	6 "

Dissolve oil in alcohol, add wines and tinctures, and filter.

Dose.—One-half to teaspoonful.

GUAIAC MIXTURE.

Guaiac Resin	3 drachms.
White Sugar	4 "
Gum Arabic	2 "
Cinnamon Water, to make	1 pint.

Triturate guaiac and sugar together, add gum, and lastly, gradually add cinnamon water.

MILBURN'S MIXTURE.

Precipitate Prepared Chalk . .	2 drachms.
Loaf Sugar	2 "
Powdered Gum Arabic . . .	2 "
Mint Water (green preferred) . .	4½ ounces.
Laudanum	10 drops.
Spirits of Lavender (compound) .	2 drachms.
Simple Syrup	1½ ounce.
Tincture of Kino	1 "

Mix.

Useful in loose bowels of children, and can be given to them after each alvine evacuation, regardless of number.

Dose.—From half to a tablespoonful. Shake well before using.

COMPOUND POWDER CATECHU.

Catechu (powdered)	1 ounce.
Kino (powdered)	4 drachms.
Rhatany (powdered) . . .	4 "
Cinnamon (powdered) . . .	3 "
Nutmeg (powdered)	2 "
Camphor (powdered) . . .	1 "
Gum Arabic (powdered) . . .	6 "

Mix. Useful in diarrhœa, etc.

Dose.—Five to ten grains.

ELIXIR BENZOIN (COMPOUND).

Pulverised Squills	3	ounces.
Pulverised Orris	3	,,
Pulverised Elecampane	3	,,
Pulverised Benzoin	120	grains.
Pulverised Licorice	80	,,
Pulverised Anise Seed	80	,,
Pulverised Myrrh	80	,,
Pulverised Saffron	18	,,
Diluted Alcohol, q. s.		
Simple Elixir, q. s., to make	1	pint.

Macerate drugs with diluted alcohol till eight ounces of percolate is obtained, then add elixir, and filter.

Use in catarrh and asthma.

Dose.—One teaspoonful.

CARTER'S CITRUS CANADENSIS.

Fluid Extract of Blood Root	8	ounces.
Fluid Extract of Lobelia	6	,,
Fluid Extract of Licorice	8	,,
Tincture of Opii	24	,,
Oil of Lemon	2	,,
Alcohol	30	,,
Tincture of Capsicum	6	,,
New Orleans Syrup	5	gallons.

Add the whites of five eggs to syrup, and bring to a boil; put oil of lemon with alcohol, and add ingredients.

TOOTHACHE DROPS.

Chloroform	3	ounces.
Creosote	1	,,
Sulphate of Morphia	½	drachm.

Mix the morphia with the creosote, let stand until solution is clear, then add the chloroform.

COMPOUND FLUID EXTRACT BUCHU.

Fluid Extract of Dandelion	3	ounces.
Fluid Extract of Buchu	4	,,
Fluid Extract of Juniper Berries	3	,,
Fluid Extract of Pareira Brava	2	,,
Fluid Extract of Stone Root	2	,,
Acetate Potash	2	,,

Mix.

Dose.—One-half to one teaspoonful.

For diseases of the urinary and genital organs.

LORD'S CHALK MIXTURE.

Tincture of Kino	1	ounce.
Tincture of Camphor Opium	1	,,
Tincture of Catechu	1	drachm.
Tincture of Opium	1	,,
Spirits of Lavender Compound	½	ounce.
Syrup (simple)	½	,,
Prepared Chalk	1½	,,
Mucilage Acacia	3	,,

Mix.

Dose.—Tea to tablespoonful.

McKINZIE'S OINTMENT.

Powdered Sulphate of Zinc	4	ounces.
Liquid Storax	1	,,
Lard	16	,,

Mix, by means of heat and trituration, over a water-bath about an hour.

A useful application for tetter and scald-head. Apply night and morning, first washing the spot with Castile soap and warm water.

CELERY COMPOUND.

Celery Seed	384	grains.
Catnip Herb	640	,,
Chamomile (German)	384	,,
Alcohol (diluted), sufficient.		
Simple Elixir, to make	1	pint.

Percolate drugs with diluted alcohol till four ounces are obtained, then add elixir, and filter.

Each fluid drachm contains three grains each of celery and chamomile, and five grains of catnip herb.

Dose.—For children teething, from ten to sixty drops, according to age.

LIQUID PANCREATIN.

Pancreatin	384	grains.
Water	5	ounces.
Glycerine	3	,,

Dissolve and filter.

HEADACHE LINIMENT.

Compound Soap Liniment	2	ounces.
Chloroform	1	,,
Aqua Ammonia	½	,,

Mix.

IMPROVED ITCH OINTMENT.

Vaseline or Lard	12½	ounces.
Flowers Sulphur	2	,,
Bicarbonate Potass.	1	,,
Oil Bitter Almonds	1	drachm.

MILK AND LIME WATER.

Lime Water	3	ounces.
Sweet Milk	6	,,
Table Salt	10	grains.

Mix.

Dose.—A wineglassful two or three times a day.

This is a valuable remedy in gastric irritability, dyspepsia, and even cholera. It is also a digestible and nourishing food suitable for almost any invalid.

HUNTER'S RED DROPS.

Corrosive Sublimate	10	grains.
Muriatic Acid	12	drops, or q. s.

Triturate in glass mortar, and add gradually spirits of lavender comp. 1 ounce.

Mix.

Dose.—Five to twenty drops in wine, or spirits and water.

A powerful alterative in syphilitic diseases.

MUSTARD OIL LINIMENT.

Crude Mustard Seed Oil	16 ounces.
Ethereal Oil of Mustard	30 to 40 drops.
Aqua Ammonia	4 ounces, or q. s.

To form into a mixture of a soapy consistency. Mix and bottle in broad mouthed vials.

STYPTIC COLLODION.

The *Chemist and Druggist*, London, says, that the following will instantly coagulate blood, forming a consistent clot, under which wounds will readily heal:—

Collodion	100 parts.
Carbolic Acid	10 „
Tannic Acid	5 „
Benzoic Acid	5 „

Mix the ingredients in the above order.

BASHAM MIXTURES—No. 1.

Muriate Tincture of Iron	6 drachms.
Acetic Acid (dil.)	1 ounce.
Solution Acetate of Ammonia	7 „
Simple Elixir	4 „
Water, to make	1 pint.

Dose.—One tablespoonful after each meal.

No. 2.

Muriate Tinct. Iron	½ ounce.
Acid Phos. (dil.)	6 drachms.
Simple Elixir	5 ounces.
Syr., q. s. ad.	12 „

Dose.—Tablespoonful after each meal.

No. 3.

Pulv. Sulph. Iron Exsic.	½ ounce.
Pure Carbonate Potass.	½ „
Syrup	q. s.

Mix, and make 96 pills.

LOCAL APPLICATION IN IRRITABLE AND INFLAMED PILES.

A writer in *Braithwaite's Retrospect* has the following: During the past few months I have given a somewhat extended trial to the new extract of Hamamelis Virginica, called Hazetine. As a local application in irritable and inflamed piles, situated at the margin of the anus, where the remedy can be readily applied, I have never met its equal. In most of the cases submitted to the treatment, the relief was immediate and permanent. My plan has been to have the part bathed three or four times a day, and a piece of lint dipped in it, kept applied to the anus during the intervals. All urgent symptoms have passed away in from twelve to twenty-four hours.

APHRODISIAC PILL.

Quinine	1 grain.
Ext. Damiana (solid)	3 „
Ext. Nux Vomica (solid)	$\frac{1}{8}$ „
Phosphorus	$\frac{1}{100}$ „

Make 1 pill.

COUGH MIXTURE IN CONSUMPTION.

Mist. Glycyrrhiza (Com.)	4 ounces.
Syr. Prunus Virg.	2 „
Sulph. Quinine	32 grains.
Sulph. Morphia	2 „
Elixir Taraxacum (Com.)	2 ounces.

Mix.

Dose.—Dessertspoonful every 4 hours.

CATARRH REMEDY.

(*Said to be Sage's.*)

Powdered Hydrastis Canadensis	5 drachms.
Indigo	½ „
Powdered Camphor	2 „
Carbolic Acid	2 „
Common Salt	50 „

Powder the camphor by means of alcohol, and mix with the salt previously reduced to a fine powder. Rub the indigo and carbolic acid together, mix with the salt and camphor, and add the powdered hydrastis. Mix intimately without pressure in a mortar.

FOR BOILS AND CARBUNCLES.

Tinct. Iodine	2 drachms.
Tinct. Aconite	1 „
Aqua	1 „

Mix.

Apply four times a day.

NIGHT SWEATS.

Fluid Extract of Belladonna	1 ounce.
Whisky or Brandy	1 „

Mix.

Sponge the body on going to bed.

PALPITATION OF THE HEART.

Tincture of Belladonna	20 drops.
Tincture of Nux Vomica	10 „
Aqua Camphor	1 ounce.

Mix.

Dose.—Teaspoonful in water four times a day.

GLEET.

Sulphate of Copper	20 grains.
Sulphate of Morphia	10 „
Aqua, q. s. ad.	8 ounces.

Use as an injection three or four times a day.

RINGWORM.

Thymol	1 to 2 parts.
Chloroform	8 „
Olive Oil	24 „

Mix. The thymol destroys the fungus. The oil prevents irritation and rapid evaporation, while the chloroform facilitates the absorption of the active ingredients by acting on the sebaceous glands.

WHITE COPAIBA MIXTURE.

Copaiba Mixture	1 ounce.
Syr. of Gum Acacia	3 "
Powdered Gum Acacia	½ "
Bromide of Potash	1 "
Oil of Terebinth	25 drops.
Aqua, q. s. ad.	8 ounces.

Mix.

CUBEB MIXTURE.

Oleoresin of Cubebs	1 ounce.
Bromide of Potass.	1 "
Syrup of Gum	2 "
Oil of Sassafras	10 drops.
Aqua, q. s. ad.	6 ounces.

Mix.

BITTER MIXTURE OF POTASSIUM IODIDE.

Iodide Potassium	1 drachm.
Tincture Quassia	½ ounce.
Syrup	½ "

Dose.—One teaspoonful.

EMULSION OF TURPENTINE OIL.

Oil of Turpentine	4 drachms.
Powdered Gum Acacia	2 "
Syrup	2 "
Water, to make	2 ounces.

Mix the powder with the oil; add ½ ounce of water, and stir till the emulsion is formed, then add the remainder of the water and syrup.

Oil of turpentine is considered one of the most troublesome bodies to emulsify; prepared by this form there is no difficulty.

MEIG'S MIXTURE OF GENTIAN AND IRON.

Citrate of Iron and Ammonia	1 part.
Fluid Extract of Gentian	½ "
Compound Spirits of Lavender	8 "
Alcohol	4 "
Sugar	12 "
Water, sufficient to make	64 "

Mix the fluid extract with eight parts of water; add the compound spirits of lavender, treat this with hydrated oxide of iron, and filter; mix the other ingredients with the filtrate and repeat the filtration if necessary.

ASTRINGENT ACID MIXTURE.

Aromatic Sulphuric Acid	40 minims.
Extract Logwood	1 drachm.
Tincture Opium (Camphorated)	4 "
Syrup Ginger, q. s. to make	1 ounce.

PAIN KILLER.

Powdered Guaiac	20 pounds.
Gum Camphor	2 "
Powdered Cayenne Pepper	6 "
Water of Ammonia	1 "
Opium (powdered)	⅓ "
Alcohol	32 gallons.

Macerate for two weeks, press, and filter.

ACUTE BRONCHITIS.

Vini Ipecacuanhæ	2 drachms.
Liquid Potassii Citratis	4 ounces.
Tincture Opii Camphorate	2 drachms.
Syrupi Acaciæ	1 ounce.

Mix. *Dose.*—A tablespoonful thrice daily in the first stage of ordinary acute bronchitis.

This union of the sedative effects of opium with the excito-secretory action of the ipecacuanhæ on the congested mucous membrane has been found very serviceable.

SUPPOSITORIES OF CHLORAL.

Cocoa Butter	165 grains.
White Wax	105 "
Chloral Hydrate	90 "

Divide into six suppositories.

DAY'S KIDNEY PAD.

Digitalis Leaves	2 ounces.
Black Cohosh	1½ "
Juniper Berries	1 "
Queen of the Meadow	1 "
Gum Guaiac	1 "
Gum Benzoin	1 "
Oil of Juniper	1½ "

Grind the drugs to a moderately fine powder, add the oil and gums.

Make an oblong pad to wear over kidneys.

GURLMETTE'S HEAD PAD.

Angelica Root	1 ounce.
Ladies' Slipper	1 "
Lupulin	1 "
Battle's Bromidia	1 drachm.
Fluid Ext. Jamaica Dogwood	1 "
Oil of Eucalyptus	4 "

Grind the drugs to moderately fine powder; make into an oblong pad, put the pad on a roller of oil silk.

Wear the pad over the centre of the forehead.

IN ASTHMATIC PAROXYSM.

Tincture of Lobelia	1 ounce.
Ammon. Iodidi	2 drachms.
Ammon. Bromidi	3 "
Syrup of Tolutan	4 ounces.

Mix. *Dose.*—A teaspoonful every one, two, three, or four hours.

Of this prescription Dr. Bartholow says: "It gives relief in a few minutes, and sometimes the relief is permanent."

SIMMONS' LIVER REGULATOR.

(*Said to be.*)

Liverwort	1 ounce.
Leptandra	1 "
Serpentaria	1 "
Senna	1½ "
Water	2½ pints.
Whisky	½ "

Bring the water to a boil and pour over the drugs; let stand one day; strain, and add the whisky.

LIVER PAD.

Mandrake Root	½ ounce.
Bayberry Bark	2 drachms.
Leptandra Root	½ ounce.
Cinchona Bark	1 ,,
Gum Guaiac (powder)	1 ,,
Fœnugreek	¼ ,,
Oil Eucalyptus	2 drachms.

Grind the drugs, mix with the guaiac, add the oil. Make into a diamond-shaped pad, to be worn over the pit of the stomach. Should be worn for several weeks.

The above is similar to Holman's Liver Pad.

CUTICURA RESOLVENT.

(*Said to be.*)

Aloes (Soct.)	1 drachm.
Rhubarb (powdered)	1 ,,
Iodide Potass.	36 grains.
Whisky	1 pint.

Macerate over night, and filter.

COMPOUND FOR CLEANING GLOVES.

Eau de Javelle (solution of Chlorate of Soda)	8½ ounces.
Ammonia	½ ,,
Powdered Soap	12½ ,,
Water	9½ ,,

Make a soft paste, and use with a flannel.

NEW GLOVE CLEANSER.

Benzine (deodorised)	1 gallon.
Chloroform	1 ounce.
Ether (Sulph.)	1 ,,
Alcohol	2 ,,
Oil of Cologne	1 ,,

Mix. Very inflammable; use with caution.

CATARRH SNUFF.

Calomel	1 drachm.
Camphor (pulverised)	1 ,,
Acacia	2 ,,

POISONOUS SOLUTIONS FOR DISPENSING.

George W. Sloan reports that from his own experience, "solutions of alkaloid salts made with *distilled* water, carefully filtered, kept in well stoppered bottles, in a *dark* closet of an equable temperature, do keep well for long periods." He appends a list of solutions which he keeps on hand in his own practice, viz.:—

Article.	Solvent.	Amount.
Chloral Hydrate .	Water .	ʒ i. in fl. ʒ i.
Corrosive Sub. .	Alcohol .	gr. i. in fl. ʒ i.
Zinc Chloride . .	Water .	gr. ij. in fl. ʒ i.
Atropia Sulphate .	Water .	gr. i. in fl. ʒ i.
Dubonisin . .	Water .	gr. i. in fl. ʒ i.
Eserine Sulphate .	Water .	gr. i. in fl. ʒ i.
Strychnia Sulphate .	Alcohol 1 Water 3	gr. i. in fl. ʒ i.
Calcium Bromide .	Water .	ʒ i. in fl. ʒ i.
Zinc Bromide .	Water .	ʒ i. in fl. ʒ i.

TOOTHACHE JELLY.

Carbolic Acid (crystallised) . . .	½ ounce.
Collodion	½ ,,

Melt the carbolic acid by placing bottle in hot water; then add the collodion.

For use, place a little cotton or wool in the tooth, previously saturated in the jelly, care being taken to prevent the cotton or wool from coming in contact with the cheek.

SELTZER APERIENT.

Rochelle Salts	39 ounces.
Bicarbonate Soda	20 ,,
Tartaric Acid	18 ,,
Sulphate Magnesia	11 ,,

Dry each separately at a heat not to exceed 120° Fahrenheit; powder and pass through a sieve. Mix thoroughly and bottle.

SANDAL WOOD EMULSION.

Oil Sandal Wood	5 drachms.
Copaiba Balsam	25 ,,
Gum Tragacanth (pulverise) . . .	3 ,,
Gum Acacia (pulverise)	2 ,,
Sugar	13 ,,
Oil Wintergreen	2 ,,
Aqua, q. s. to make	27½ ounces.

Mix.

Dose.—Teaspoonful three times a day.

The above gives one drop of the oil of sandal wood, and five drops of the balsam of copaiba in each teaspoonful.

RED WASH.

Sugar of Lead	1 drachm
Sulphate of Zinc	3 ,,
Fluid Extract of Rhatany . . .	4 ,,
Fluid Extract of Hydrastis . . .	4 ounces.
Fluid Extract of Gold Thread . . .	4 ,,
Aqua Extract of Opium	6 drachms.
Water, to make	2 pints.

Mix.

Inject a portion three times a day.

ELIXIR ANTACID (COMPOUND).

Bicarbonate of Soda	1½ ounce.
Infusion of Gentian	4 ,,
Aqua Peppermint	4 ,,
Tincture of Cardamom (Compound) .	½ ,,
Simple Elixir, to make . . .	1 pint.

Mix and filter.

Dose.—Tea to tablespoonful as an antacid corrective in indigestion.

LOCAL ANODYNE.

Elastic Collodion	1 ounce.
Muriate of Morphia	15 grains.

Dissolve salt in collodion. Spread with a camel's hair brush over the parts, and place oil silk over the spot.

ELIXIR OF QUINQUINIA.

Oil of Orange	8	drops.
Oil of Cinnamon (Ceylon)	2	„
Alcohol	4	ounces.
Simple Syrup	6	„
Water, to make	16	„
Quinquinia	128	grains.
Citric Acid	90	„

Make a solution of the citric acid in 2 ounces of the water, in which dissolve the quinquinia; then add the syrup with the oil, the latter previously mixed with the alcohol. Finally add water until the whole measures 16 fluid ounces, then filter.

GRANULATED CITRATE OF MAGNESIA.

Citric Acid (powdered)	4	pound
Calcined Magnesia	1¼	„
Bicarbonate of Soda	3	„
Tartaric Acid	3	„
Pulv. Sacc. Alb.	6	„
Ol. Lemons	½	drachm.
Alcohol, q. s.		

To the powdered citric acid add the sugar and mix thoroughly, then add the soda, magnesia and tartaric acid; pass the whole through a No. 4 sieve to insure it being thoroughly mixed; moisten the powder with strong alcohol, and pass through a No. 8 sieve, and place it on a wooden tray in a warm room to dry; then add the oil of lemon and bottle instantly. It usually takes twenty-four hours and a temperature of 120° Fahr. to dry the salt perfectly. This preparation requires careful and skilful manipulation to insure good results.

PERRY'S COMPOUND SARSAPARILLA BLOOD PURIFIER.

Turkey Corn Root	2	pounds.
Stillingia Root	2	„
Sarsaparilla Root	2	„
Yellow Dock Root	2	„
Sassafras Bark	1	„
Simple Syrup	2	gallons.
Diluted Alcohol	32	pints.
Water, q. s.		
Iodide of Potassa	2	pounds.

Percolate roots and bark with diluted alcohol; add syrup, then add iodide potass. Dissolve in water to make six gallons.

COMPOUND LICORICE POWDER.

(*German Brustpulver.*)

Powdered Senna	2	ounces.
Powdered Licorice Root	2	„
Powdered Fennel Seed	1	„
Washed Sulphur	1	„
Powdered Sugar	6	„

Mix them.

CHURCHILL'S IODINE CAUSTIC.

Iodine	1	drachm.
Iodide of Potassium	2	„
Water	½	ounce.

Mix.

GOWLAND'S FRECKLE LOTION.

Sweet Almonds (blanched)	1	ounce.
Bitter Almonds (blanched)	½	„
Corrosive Sublimate	15	grains.
Alcohol	2½	drachms.
Water, to make	1	pint.

Make an emulsion of the almonds with the water, and strain; add the mercurial salt dissolved in the spirit; lastly, add water to make the whole measure 1 pint.

GODFREY'S CORDIAL.

Tincture of Opium	6	ounces.
Molasses	4	pints.
Alcohol	8	ounces.
Water	6½	pints.
Carbonate of Potassium	5	drachms.
Oil of Sassafras	1	„

Dissolve the potassium in the water; add the molasses; heat over a gentle fire till it simmers; remove the scum; add the other ingredients.

CHLORODYNE.

Purified Chloroform	4	fl. ounces.
Stronger Ether	1	„ „
Stronger Alcohol	4	„ „
Molasses	4	„ „
Powdered Extract of Licorice	2½	troy ounces.
Muriate of Morphia	8	grains.
Oil of Peppermint	16	minims.
Simple Syrup	17½	fl. ounces.
Hydrocyanic Acid, 2 per cent	2	„ „

Dissolve the morphia and the oil of peppermint in the alcohol. Mix the chloroform and ether with this solution. Mix the licorice with the syrup and add the molasses. Shake these two mixtures well together, and lastly add the hydrocyanic acid and again shake.

Dose.—Five to ten minims.

DIAPHORETIC POWDER.

Bayberry Bark (powdered)	4	ounces
Pleurisy Root (powdered)	4	„
Wild Ginger (powdered)	2	„
Ginger (powdered)	2	„
Sassafras Bark (powdered)	1	„
Lady's Slipper (powdered)	½	„
Capsicum (powdered)	½	„
Cloves (powdered)	¼	„

Mix.

A heaping teaspoonful to a pint of boiling water, well sweetened, and drink freely, or the above can be made into fluid form, as is the essence of composition, by maceration or percolation with diluted alcohol, to make 1 quart.

The above is a valuable remedy, useful in sudden colds, coughs, hoarseness, influenza, sore throat, headache, cold hands and feet, dysentery, cholera morbus, colic, jaundice, etc., and is also a mild and safe stimulant.

COMPOUND SPIRIT OF BALM.

Fresh Balm	90 parts.
Fresh Lemon Peel	15 ,,
Cinnamon	8 ,,
Cloves	8 ,,
Nutmegs	8 ,,
Angelica Root	4 ,,
Coriander Seeds	4 ,,
Alcohol, 86 per cent.	500 ,,

Macerate for four days, and distil.

AROMATIC POWDER OF CHALK.

Cinnamon (in powder)	4 ounces.
Nutmeg	3 ,,
Saffron	3 ,,
Cloves	1½ ,,
Cardamoms	1 ,,
Sugar	25 ,,
Prepared Chalk	11 ,,

Mix them thoroughly; pass the powder through a fine sieve, and finally rub it lightly in a mortar. Keep it in a stoppered bottle.

Dose.—Ten to sixty grains.

TINCTURE OF KINO THAT WILL NOT GELATINISE

Kino (in fine powder)	1½ ounce.
Alcohol	8 fl. ,,
Water	4 ,, ,,
Glycerine	4 ,, ,,

Mix the alcohol, water and glycerine together; and having mixed the kino with an equal bulk of sand, introduce it into a glass percolator, and exhaust it with the menstruum in the usual manner.

CHOLERA MIXTURE OF THE BRITISH ARMY.

Oil of Anise Seed	3 drachms.
Oil of Cajeput	3 ,,
Oil of Juniper	3 ,,
Ether	8 ,,
Liquor Acid of Haller	1 ,,
Tinct. of Cinnamon	4 ounces.

Mix.

Dose.—Take ten drops every fifteen minutes in a little water.

Liquor acid of haller consists of three parts of alcohol, and one part of concentrated sulphuric acid.

NO. 6 HOT DROPS.

Powdered Capsicum	1 ounce.
Powdered Gum Myrrh	4 ,,
Alcohol	2 pints.

Macerate, press and filter.

TOBIAS' VENETIAN LINIMENT.

Spirits of Hartshorn	5 ounces.
Camphor	2 ,,
Tincture of Capsicum	5 ,,
Alcohol	30 ,,
Water	10 ,,

Mix.

READY WAY FOR PAREGORIC.

Tinct. of Opium	384 drops.
Oil of Anise	½ drachm.
Benzoic Acid	30 grains.
Camphor	20 ,,
Honey	1 ounce.
Diluted Alcohol	1 pint.

Mix, and filter. The above is recommended only when pushed for time.

GODDARD'S DIARRHŒA MIXTURE.

Tincture of Catechu	4 fl. ounces.
Tincture of Opium	2 ,, ,,
Tincture of Camphor	2 ,, ,,
Aromatic Spirits of Ammonia	1 ,, ,,

Mix.

Dose.—Forty drops every two hours.

BROWN'S BRONCHIAL TROCHES.

Pulverised White Sugar	1½ pound.
Pulverised Ext. of Licorice	1 ,,
Pulverised Cubebs	4 ounces.
Pulverised Gum Arabic	4 ,,
Fluid Ext. of Conium	1 ,,

Mix.

TRIX, OR JOKES.

Ext. of Licorice	3 ounces.
Oil of Cloves	90 drops.
Oil of Cinnamon	15 ,,

Mix.

JAYNE'S EXPECTORANT.

Syrup of Squill	2 ounces.
Tincture of Tolu	1½ ,,
Tincture of Camphor	1 drachm.
Tincture of Lobelia	1 ,,
Tincture of Digitalis	1 ,,
Tincture of Opium	2 ,,
Pulverised Ipecac	4 grains.
Tartar Emetic	4 ,,

Mix.

BUCKLER'S COMP. MIXTURE.

Tartar Emetic	2 grains.
Pulverised Ipecac	40 ,,
Syrup of Squills	2 fl. ounces.

Mix. Teaspoonful every ten minutes until it operates as an emetic.

OSGOOD'S CELEBRATED AGUE CURE.

Sulph. of Quinine	2 drachms.
Fluid Ext. of Leptandra	2 ,,
Saturated Tinct. of Queen's Root	4 ounces.
Fluid Ext. Podophyllin	3 drachms.
Oil of Sassafras	10 drops.
Oil of Wintergreen	10 ,,

New Orleans Molasses, sufficient to make an 8-ounce mixture.

PISO'S CONSUMPTION CURE.

Tincture of Tolu	$\frac{1}{2}$	ounce.
Fluid Ext. of Lobelia	2	drachms.
Fluid Ext. of Cannabis Indica	2	,,
Sulph. of Morphia	4	grains.
Tartar Emetic	4	,,
Chloroform	1	drachm.
Essence of Spearmint	10	drops.
Hot Water	8	ounces.
Sugar	14	,,

The fluid extracts, tincture of tolu, chloroform and essence of spearmint must be mixed with the sugar in a bottle. Dissolve the morphia and tartar emetic in the hot water, and mix; when thoroughly dissolved, filter.

Dose.—For an adult, one tablespoonful.

AYERS' SARSAPARILLA.

Fluid Ext. of Sarsaparilla	3	ounces.
Fluid Ext. of Stillingia	3	,,
Fluid Ext. of Yellow Dock	2	,,
Fluid Ext. of May-apple	2	,,
Sugar	1	,,
Iodide of Potassium	90	grains.
Iodine of Iron	10	,,

Mix them.

ROSE BANDOLINE

Gum Tragacanth	1	ounce.
Soft Water	50	,,
Alcohol	8	,,
Oil of Rose	10	drops.

Macerate the gum in the water until well dissolved; strain, with pressure, through a cloth; add the alcohol, having the oil of rose dissolved in it, and mix well.

STORMONT'S DISINFECTANT.

Sulphate of Iron (crushed)	10	pounds.
Carbolic Acid (crude)	8	ounces.
Water	10	gallons.

Mix. Useful in time of epidemics.

INHALANT.

Tincture of Iodine	4	drachms.
Aqua Ammonia	3	,,
Chloroform	1	,,
Perfume, q. s. to suit.		

Mix. Used in catarrh and headache.

KELLOGG'S RED DROPS.

Spirits of Camphor	2	ounces.
Spirit of Origanum	$\frac{1}{4}$	,,
Oil of Sassafras	$\frac{1}{4}$	,,
Oil of Turpentine	$\frac{1}{2}$	,,
Colour Tincture	4	,,

Mix them.

INJECTION BROU.

Distilled Water	100·00	parts.
Sulphate of Zinc	0·50	,,
Acetate of Lead	200·00	,,
Tincture of Catechu	200·00	,,
Wine of Opium	200·00	,,

Mix them.

DR. PIERCE'S GOLDEN MEDICAL DISCOVERY.

Fluid Extract of Cinchona	16	ounces.
Fluid Extract of Columbo	4	,,
Fluid Extract of Guaiac	8	,,
Fluid Extract of Licorice	4	,,
Tincture of Opium	1	,,
Podophyllin (resinoid)	120	grains.
Glycerine	6	fl. pints.
Alcohol, q. s.		

Dissolve the podophyllin in the alcohol, and add the rest of the ingredients. Mix them.

Dose.—A teaspoonful.

DR. PIERCE'S FAVOURITE PRESCRIPTION.

Savin	10	parts.
Agaric	5	,,
Cinnamon	5	,,
Peruvian Bark	10	,,
Make a decoction of water	220	,,
And add Gum Arabic	10	,,
Sugar	5	,,
Tincture of Digitalis	2	,,
Tincture of Opium	2	,,
Oil of Anise	8	,,
Dissolve in Alcohol	45	,,

COE'S DYSPEPSIA CURE.

Powdered Rhubarb	2	drachms.
Fluid Extract of Gentian	3	,,
Peppermint Water	$7\frac{1}{2}$	ounces.
Bicarbonate of Sodium	6	drachms.

Mix them.

Dose.—A teaspoonful half an hour before meals.

AYERS' CHERRY PECTORAL.

Syrup of Wild Cherry	6	drachms.
Syrup of Squills	3	,,
Tincture of Blood Root	2	,,
Sweet Spirits of Nitre	2	,,
Wine of Antimony	3	,,
Wine of Ipecac	3	,,
Syrup	$1\frac{1}{2}$	ounce.
Acetate of Morphia	2	grains.
Spirit of Bitter Almonds	1	drachm.

Mix.

WALKER'S VINEGAR BITTERS.

Powdered Golden Seal	1	ounce.
Powdered Aloes (Cape)	$\frac{1}{2}$	,,
Water	16	,,

Bottle up, tie the cork down tightly. Ready for use in ten days.

HALL'S HAIR RENEWER.

Precipitated Sulphur	1	drachm.
Acetate of Lead	1	,,
Salt (common)	2	,,
Glycerine	8	fl. ounces.
Bay Rum	2	,, ,,
Jamaica Rum	4	,, ,,
Water	16	,, ,,

Shake before using.

TOBIAS' DERBY CONDITION POWDERS.

Tartar Emetic (powdered)	2	grams.
Crude Antimony	20	,,
Sulphur	10	,,
Saltpetre	10	,,
Fœnugreek (powdered)	40	,,
Juniper Berries	20	,,

Mix them.

THOMPSON'S EYE WATER.

Sulphate of Copper	10	grains.
Sulphate of Zinc	40	,,
Rose Water	2	pints.
Tincture of Saffron	4	drachms.
Tincture of Camphor	4	,,

Mix and filter.

GRANULAR EFFERVESCENT CITRATE OF MAGNESIA.

Sulphate of Magnesia	5	ounces.
Bicarbonate of Soda	6	,,
Citric Acid	5	,,
Sugar	5	,,

Mix the above, all in powder, with sufficient absolute alcohol to moisten the mass thoroughly; pass through a No. 6 sieve, and separate the portion, which has not granulated, by means of a No. 20 sieve; dry the granules at a temperature not above 60° Fahr.

Dose.—One or two teaspoonfuls dissolved in water.

GRANULAR EFFERVESCENT VICHY SALT.

Sugar	4	ounces.
Citric Acid	5	,,
Bicarbonate of Soda	7	,,
Carbonate of Magnesia	60	grains.
Carbonate of Calcium	74	,,
Chlorate of Sodium	128	,,
Sulphate of Sodium	128	,,
Carbonate of Iron	7	,,

Mix, and observe preceding directions.

BOILS.

Boracic acid applied to boils before or after incision will promptly arrest their development.

NEW TREATMENT FOR VAGINITIS.

M. Terrillon proposes a method of treatment which consists essentially in the introduction into the vagina of the following ointment:—

Ac. Tannic	50	grams.
Amylum	150	,,
Ung. Petrolei	150	,,

Mix. This ointment is placed in a sort of speculum, so arranged that the ointment can be forced out as the instrument is withdrawn from the vagina. If the vulvar opening is large a small tampon of cotton may be introduced.

Generally from 15 to 20 grams of the unguent is sufficient at one application, and it need not be repeated for seven or eight days.

PLEIS' FIT POWDERS.

Bromide of Potassium	15	grains.
Powdered Gentian	5	,,

Mix. Make one powder.

PILLS FOR DYSPEPSIA.

Diastase	10	grains.
Pepsin	50	,,
Extract of Gentian	50	,,
Tartaric Acid	50	,,
Powdered Rhubarb	50	,,

Gentian, sufficient. Divide into 3-grain pills.

Dose.—Two to three pills during meals, or shortly before.

QUINIDIA COMBINATION FOR INTERMITTENTS.

Reed recommends the following formula in the treatment of intermittents:—

Quinidiæ Sulph.	30	grains.
Oleo-resinæ Capsici	3	,,
Morphæ Sulph.	1	,,
Syrupi, q. s.		

Mix.

Dose.—One every three hours.

He says that if a cholagogue cathartic be given at the start, and a full opiate (preferably a hypodermic injection of morphia) an hour before the expected paroxysm, this combination has been uniformly successful in his hands, even in most obstinate cases of intermittents.

In cases of malarial cachexia, he finds that many recover under the influence of sea air without any medication. When the latter is necessary, he has seen excellent results from small doses of nux vomica, combined with $\frac{1}{16}$ grain of podophyllin, or $\frac{1}{4}$ grain of blue pill, and repeat every four or six hours.

HOT WATER FOR THE HEART.

Dr. A. Paggi records the following observation: "He states that in Paris he saw a case in which, under the inhalation of chloroform, the heart ceased to beat, and artificial respiration for ten minutes failed to restore circulation, when Dr. Labbe dipped a cloth in boiling water and applied it in the region of the heart, with the result of immediately restoring the action of that organ."

QUINIA IN THE TREATMENT OF CHOLERA INFANTUM.

Dr. Otis T. Mason, of Richmond, says he has not lost a case of this disease since employing quinine in conjunction with calomel. Quinine is given until full physiological effects are obtained.

HARDY'S OINTMENT.

This ointment, used in France to prevent falling off of the hair, is given as follows :—

Beef Fat	17 drachms.
Castor Oil	6 ,,
Gallic Acid	30 grains.
Auiline, q. s.	

ARSENICAL TREATMENT OF CHOREA.

M. Siredey has long had recourse to arsenic in the treatment of rhematismal chorea, and has had good results from this medication. He uses the solution of Bondin :—

Ac. Arsenious	15 grains.
Aquæ destill.	2 ounces.

Mix. This is allowed to boil for about a quarter of an hour, and is then ready for use. The extreme dilution of the solution is favourable for its use among children. For a child from six to ten years of age, about 1½ drachm may be given daily, in divided doses, in sweetened water. In this way the medicament is generally well tolerated.

Dr. Sottmann, of the Breslau Clinic, constantly prescribes the following solution in chorea :—

Liquor Fowlere	4 minims.
Aquæ	2 drachms.

Mix. This quantity to be taken in divided doses daily. He generally obtains a complete cure in from sixteen to twenty-one days.

CUTANEOUS ERUPTIONS.

Chlorate Hydrate	2 drachms.
Glycerine	1 ounces.
Aqua	5 ,,

Mix. Moisten the parts affected with this solution three or four times a day.

GOUT.

Sulphate of Quinine	2 grains.
Extract of Colchici Acetate	¼ ,,
Extract of Conii	3 ,,

Make pill. To be given three times a day.

AMENORRHŒA.

Ammoniated Tincture of Guaiacum	1 ounce.
Balsam Copaiba	½ fl. ,,

Dose.—Teaspoonful three times a day.

CHRONIC BRONCHITIS.

Morphiæ Hydrochlor.	4 grains.
Pil Scillæ (Compound)	48 ,,

Make 12 pills; one to be taken at bedtime.

ERSIPELAS.

(*Local Application.*)

Camphor	15 grains.
Tannin	15 ,,
Sulphuric Ether	2 drachms.

Apply every three hours.

HEMORRHAGE.

Gallic Acid	2 drachm.
Sulphuric Acid (Aromatic)	2 ,,
Tincture of Cinnamon	2 ounces.
Water	2 ,,

Dose.—Teaspoonful mixed in a wineglass of water every four hours.

DYSMENORRHŒA.

Camphor	1½ drachm.
Extract of Belladonna	15 grains.
Sulphate of Quinine	15 ,,
Pulverised Acacia, q. s. to make 30 pills.	

Dose.—Take one every four hours until relieved, with the following ointment applied on the lower part of the abdomen.

DYSENTERY.

Pulverised Ipecac	1½ drachm.
Fluid Extract of Gelseminum	12 drops.
Hydrarg. Chl. Mite	10 grains.
Sulphate of Morphia	1½ ,,

Mix. Divide into twelve waters.

Dose.—Give one every two hours.

MIXTURE OF SULPHATE OF CINCHONIA.

Sulphate of Cinchonia	12 grains.
Dilute Sulphuric Acid	25 minims.
Peppermint Water, to make	1 fl. ounce.

Dose.—One to four teaspoonfuls.

COMPOUND ETHER MIXTURE.

Hoffman's Anodyne	2½ drachms.
Tincture of Lobelia	½ ,,
Camphor Water	5 ,,

Dose.—One to two teaspoonfuls.

ACID GENTIAN MIXTURE.

Dilute Nitro Muriatic Acid	1 drachm.
Compound Infusion Gentian, q. s. to make	1 ounce.

Dose.—Two teaspoonfuls.

GERMAN CORN CURE.

Salicylic Acid	1 ounce.
Extract of Cannabis Indica	¼ ,,
Collodion	8 ,,

Mix. To be applied two or three times a week.

IN ACUTE SHOCK OF SYNCOPE.

Am. Carbonat.	10 grains.
Sp. Chloroformi	½ drachm.
Aquæ, ad.	1 ounce.

Sig.—At a draught.

NIGHT SWEATS.

Acidi Sulphurici	2½ drachms.
Tinct. Opii	1 „
Syrupi Aurantii	1 ounce.
Aquæ, ad	7 „

Sig.—Two tablespoonfuls three times a day.

The above prescription is also very useful in summer diarrhœa, and as a prophylactic against painter's colic.

ACID MIXTURE OF IRON.

Sulphate of Iron	2 grains.
Sulphate of Magnesium	1½ drachm.
Dilute Sulphuric Acid	15 minims.
Infusion Quassia, q. s. to make	1 ounce.

Dose.—One teaspoonful.

MIXTURE OF ACETATE OF IRON.

Tincture Chloride of Iron	20 minims.
Dilute Acetic Acid	20 „
Solution of Acetate Ammonia, q. s. to make	1 ounce.

Dose.—Two to four teaspoonfuls.

APERIENT IRON MIXTURE.

Sulphate of Iron	2 grains.
Sulphate of Magnesium	2 drachms.
Water	1 ounce.

Dose.—One tablespoonful.

HOPE'S CAMPHOR MIXTURE.

Acidi Nitrosi	1 drachm.
Tinct. Opii	40 drops.
Aquæ Camph.	8 ounces.

Mix.

Dose.—For diarrhœa or dysentery, one or two tablespoonfuls every two to four hours.

PILLS FOR CONSTIPATION.

Quiniæ Sulphatis	15 grains.
Piperinæ	15 „
Hydrarg. Submuriat	12 „
Ext. Nucis Vomic.	4 „

Pills, No. 30.

One pill morning and evening.

TREATMENT OF DYSENTERY.

Decocti Cinchonæ	6 fl. ounces.
Potass. Chloratis	½ ounce.

All to be taken in the course of twenty-four hours.

BLUE OINTMENT FOR RING-WORM.

Adipis	6 drachms.
Glycerinæ	2 fl. „
Sodii Carbonat	1 drachm.
Calcis Pulv.	½ „
Carbo., Liq. Pulv.	1½ „

Before applying this salve, remove scabs by using starch poultices. Treatment should be kept up two or three months, in cases of tinea tonsurants.

TREATMENT OF LARYNGEAL PHTHISIS.

Pencil the ulcerated surfaces with the following mixture :—

Glycerine	1 to 2 ounces.
Alcohol	5 to 8 drachms.
Creasoti	15 drops.

RHEUMATIC MIXTURE.

Sulphate of Quinia	30 grains.
Iodide of Potassium	15 „
Dilute Sulphuric Acid	15 drops.
Distilled Water	4 ounces.
Simple Syrup	1 drachm.

Mix.

Dose.—A teaspoonful every two hours.

SWEET QUININE MIXTURE FOR CHILDREN.

Sulphate of Quinia	15 grains.
Cold Infusion of Coffee	3 ounces.
Syrup of Chloroform	12 drachms.

SYRUP OF CHLOROFORM.

Chloroform	20 drops.
Alcohol	90 minims.
Simple Syrup	3 ounces.

Mix the chloroform and the alcohol, and to the solution add the simple syrup. A good addition to bitter mixtures and drops.

FEVER SYRUP FOR POOR PEOPLE.

Quinoidine	30 grains.
Citric Acid	5 „
Alcohol	100 „
Syrup of Coffee	2½ ounces.

Dissolve the acid and the alkaloid in the alcohol, and add the syrup in the solution.

TREATMENT OF ECZEMA.

In chronic eczema, especially in infants, and in eczema of the face, Dr. Lassar recommends an ointment. The formula for an ointment in eczema of the face, which cannot be rubbed off during sleep, is :—

Salicylic Acid	ʒss	2 grams.
Oxide of Zinc Starch	aa ʒvjss	25 „
Vaseline	ʒxiij	50 „

DIARRHŒA.

In certain cases of diarrhœa characterised by a want of intestinal tonicity, A. W. Hagenbach, M.D., has used the following with marked success:—

Olei Terebinth	fl. ʒij	8	fl. grams.
Tinct. Opii	fl. ʒiij	12	,,
Syr. Krameria	fl. ij	60	,,
Aqua Puræ, ad.	fl. ℥iv	120	,,

Mix. Emulsif.

Dose.—A teaspoonful every three or four hours.

In some cases he adds from eight to fifteen grains of chloral to the prescription. He has generally found that anæmic children, and those of hereditary nervous disposition, bear this form of medication well.

TO REMOVE FOREIGN BODIES ON THE CONJUNCTIVA BENEATH UPPER LID.

In the first place, the patient, so far as is possible, should be in a comfortable position. He may be seated in a chair with the head well supported. With a foreign body in the conjunctival sac, the patient is in distress, and his eyeball is not entirely under his control. He is not as able to respond to your requests as to where he should look, as though it were not there. Get the head, therefore, properly supported, and then with the thumb press the integument of the lid against the eyebrow, so as to put it upon the stretch, and tell the patient to look down—not to turn the head down, but to turn the eye down. Then catch the eyelashes and edge of the lid with the fingers of the other hand, and turn the lid quickly over the thumb; in the meantime the patient looks down. Then remove the foreign body with the handkerchief, and do not throw it away. Show it to the patient, and be sure that he or she recognises it—and why? The little shallow depression which that foreign body made in the conjunctiva will give a sensation of discomfort, and sometimes, not always, give rise to the same symptoms that existed before the foreign body was removed. It is well, under such circumstances, to have the proof of what you have done, lest the patient say, "He said he took it out, but I know it is in there yet."

COLICKY BABIES.

Potassi Bromidi	1	drachm.
Ol. Anisi	1	drop.
Mucil. Acaciæ	2	ounces.
Glycerini	2	,,
Aquæ	½	,,

Mix.

Of which a teaspoonful may be given when the colic comes on. We may order it without fear, knowing that it is perfectly safe, and can do no mischief, which cannot be said of the various soothing combinations and carminatives in common use in the nursery, which usually contain laudanum or morphia.

TREATMENT OF INFANTILE DIARRHŒA.

This is the chief disease of infants, and the hygiene is more necessary very often than the medicines employed. Among infants at the breast, the cause of diarrhœa is as often the fault of the nursing mother as of the infant. The abuse of baths is a prime cause, being often more injurious than beneficial, from being too prolonged, instead of a single washing of the body.

As to dentition, Dr. Simon attributes great influence, though denied by many authors. In the simple cases, after ascertaining the cause, if possible, stop everything but the milk, and give a spoonful of coffee with a little alkaline water. A tepid bath should be given each day and a starch injection; every day at each meal give a portion of the following powder:—

Calcined Magnesia	10	grams.
Prepared Cream	2	,,
Sub-nitrate of Bismuth	2	,,

At last apply warm fomentations to the bowels.

If the diarrhœa continues, and becomes catarrhal, *i.e.*, accompanied with a considerable secretion and intermitting fever, it is better to give a vomit, and afterwards a portion of sub-nitrate of bismuth, four grams with one drop of laudanum, to an infant under one year of age.

At the advanced stage, the diarrhœa becomes sympathetic of enteritis. This is distinguished by the passages, which are green, acid and extremely irritating. The fever is persistent, and the countenance indicates suffering, a sign very significant of unfavourable results.

It is now necessary to give laudanum, the true treatment of enteritis, with sub-nitrate of bismuth, a drop of the former to sixty grains of the latter, to each year of age. Paregoric can be used in the place of laudanum, five drops for one of laudanum. It ought not to be forgotten to continue the laudanum after the passages are checked, but in diminished doses. If vomiting should occur, prepared chalk and lime water should be given, and a small blister applied over the epigastric region, using the necessary precautions.

In enteritis it is often observed that membraneous fragments are expelled, with violent colic, and in these cases the injections should be frequent, and cathartics used. It is necessary to keep up this treatment, with soda water and food without grease and easy of digestion.

Chronic enteritis is extremely difficult to treat; opiates and astringents should be used, and afterwards revulsives, as tincture of iodine, croton oil, and vesicatories.

The treatment of diarrhœa is of great importance, because it may be but the beginning of choleraic diarrhœa. In these cases the danger is imminent. In these cases give a spoonful of coffee and Malaga wine, and coffee and brandy. If possible, a wine bath should be given; this stimulates the functions of the skin, and should only last five minutes.

Note.—A gram is fifteen grains.

EYE WATERS.

Laudanum	1	drachm.
Tincture of Saffron	1	,,
Decoction of Flax Seed	2	ounces.

Mix. Apply often.

ASTRINGENT COLLYRIA.

Sulphate of Zinc	1	drachm.
Rose Water	250	,,
Alcohol	8	,,

In chronic inflammation.

DRY COLLYRIA.

White Sugar	2 drachms.
Red Oxide of Mercury	10 grains.
Prepared Impure Oxide of Zinc	20 ,,

Mix.

NIGHT SWEATING.

Fluid Extract of Belladonna	1 ounce.
Whisky or Brandy	6 ,,

Sponge the body on going to bed.

PALPITATION OF THE HEART.

Tincture of Belladonna	20 drops.
Tincture of Nux Vomica	10 ,,
Camphor Water	1 ounce.

Dose.—Teaspoonful four times a day.

GASTRALGIA.

Fowler's Solution of Arsenic	1 ounce.

Dose.—Five drops three times a day.

COUGH MIXTURE.

Syr. Prunus Virg.	1 ounce.
Syr. Scillæ	1 ,,
Syr. Tolu	½ ,,
Sulphuric Ether	½ ,,

Dose.—Teaspoonful every three or four hours, when cough is troublesome.

A REMEDY FOR POISONING BY GROUND OAK.

Olive Oil	1 ounce.
Carbolic Acid	15 drops.
Ammonia Aqua	10 ,,

Dose.—Apply to the affected parts.

TO DISGUISE THE TASTE OF COD LIVER OIL.

Sweeten common vinegar with honey; take a small sip and then take the oil, the taste of which will be perfectly and pleasantly disguised.

A CURE FOR BONE FELONS, CARBUNCLES AND BOILS.

When a bone felon first begins to appear, use the following:—

Strong Tincture of Iodine	3 drachms.
Tincture of Aconite	2 ,,
Tincture of Arnica	2 ,,
Tincture of Cantharides	2 ,,

Mix. Apply by wetting a cloth in this mixture, and keep it wet and apply until the pain ceases.

TOOTHACHE.

Creosote	2 drachms.
Chloroform	2 ,,
Sydenham's Laudanum	4 ,,
Tincture of Benzoin	1 ounce.

Apply on a little cotton.

CHOLERA.

Laudanum	2 ounces.
Spirits of Camphor	2 ,,
Tincture of Capsicum	½ ,,
Tincture of Ginger	1 ,,
Essence of Peppermint	2 ,,
Hoffman's Anodyne	2 ,,

Dose.—Teaspoonful every thirty minutes till relieved.

CHOLERA MORBUS.

Magnesiæ ust	1 drachm.
Morphiæ	1 grain.
Pil. Hydrarg.	8 ,,

Divide into four powders, and give one every half-hour until relieved.

COLIC OR CHOLERA.

Chloroform	3 drachms.
Tincture of Camphor	1 ounce.
Tannic Acid	½ ,,
Sulphate of Morphia	1½ grain.

Dose.—Teaspoonful in water and syrup.

CONSTIPATION.

Mass. Hyd. Pil.	2 scruples.
Bicarbonate of Soda	1 drachm.
Spirits of Lavender (Compound)	1 ,,
Fluid Extract of Black Snake Root	1 ,,
Aqua Mentha Pip.	2 ounces.
Neutralising Cordial	1 ,,

Dose.—Tablespoonful three times a day.

GLEET.

Tincture of Chlo. Ferri	1 ounce.
Tincture of Cantharides	1 ,,
Creosote	2 drachms.

Dose.—Forty-five drops three times a day in half a cupful of sweetened water.

SCIATICA.

Colourless Tincture of Iodine	1½ ounce.
Tincture of Aconite	1 drachm.
Sulphate of Morphia	20 grains.

Apply twice a day on the track of the nerve.

GONORRHŒA.

Pulv. Catechu	120 grains.
Alum	60 ,,
Pulv. Opium	20 ,,

Dose.—Make fifty pills, and take one or two during the day.

NEURALGIA OR SICK HEADACHE.

Muriate of Ammonia	1 drachm.
Sulphate of Morphia	1 grain.
Aqua Camphor	4 ounces.
Aqua	3 ,,

Dose.—Teaspoonful every ten minutes.

DYSPEPSIA.

When there is constipation, the following mixture will be found useful :—

Pulv. Rhei	1 drachm.
Sodæ Bicarb.	1½ ,,
Ol. Menth. vir.	4 drops.
Aqua	4 ounces.

Dose.—Tablespoonful before meals.

PUERPERAL FEVER.

In cases of puerperal fever, give the following mixture :—

Sulphate of Quinine	2 grains.
Tincture of Chloride of Iron	10 drops.
Spirits of Chloroform	10 ,,
Simple Syrup	½ drachm.
Aqua Distil.	1 ounce.

To be taken every three or four hours.

RHEUMATISM.

Vin. Colchicum	½ ounce.
Pulv. Nitr. Potass.	1½ drachm.
Syrup of Morphia	1 ounce.
Syrup of Tolu	3 ,,

Dose.—Teaspoonful every five hours.

MEASLES.

Pulv. Ipecac.	10 grains.
Pulv. Opium	4 ,,
Pulv. Licorice	2 drachms.
Pulv. Chlo. Potass.	2 ,,
Pulv. Squills	2 ,,
Pulv. Prunus Virg.	2 ,,

Dose.—Teaspoonful to a cup of warm water every two hours.

NEUTRALISING CORDIAL.

Fluid Extract of Rhubarb	1 ounce.
Carbonate of Soda	1 ,,
Essence of Peppermint	1½ ,,
Simple Syrup	1 pint.

Dose.—One teaspoonful.

COUGH SYRUP.

Muriate of Ammonia	2 drachms.
Tartar Emetic	4 grains.
Dissolve in water and add	
Syrup of Licorice	4 ounces.

Dose.—Teaspoonful every three hours.

CATARRH REMEDY.

Carbolic Acid	3 drachms.
Alcohol	15 ,,
Strong Solution of Ammonia	5 ,,
Distilled Water	10 ,,

Place a few drops upon filter paper in the palm of the hand. Close the eyes and inhale deeply from it as long as any smell remains.

Keep the mixture in dark glass bottles.

VOMITING IN PREGNANCY.

Bromide of Potass.	2 drachms.
Aqua Cinnamon	3 ounces.

Dose.—Dessertspoonful after meals.

SORE THROAT.

Sulphate of Zinc	2 drachms
Pulv. Chlo. Potass.	2 ,,
Strong Sage Tea	½ pint.

Gargle frequently.

ULCERATION OF THE BOWELS.

Syrup of Acacia	2 ounces.
Sub-nitrate of Bismuth	2 drachms.
Tincture of Opium	2 ,,
Oil of Turpentine	1½ ,,
Aqua Mentha Pip.	2 ounces.

Dose.—Teaspoonful every two to six hours.

IN DIARRHŒA.

Tincture of Opium	30 drops.
Prepared Chalk	2 drachms.
Powdered Gum Arabic	4 ,,
Tincture of Catechu	2 ,,
Rose Water	2 ounces.

Dose.—Tablespoonful three times a day.

SCROFULOUS OPHTHALMIA.

Red Oxide of Mercury	1 drachm.
Sulphate of Zinc	2 ,,
Fresh Lard	12 ounces.

Rub well together, and apply to the edges of the eyelids.

CHOREA.

Sulphate of Strychnia	1 grain.
Sulphate of Quinine	1 drachm.
Acid Phosphoric (dil.)	1 ounce.
Aqua Mentha Virid.	4 ,,
Tincture of Cardamom Compound	1 ,,

Dose.—Teaspoonful three times a day.

ENLARGED SPLEEN.

Pulv. Jalap	2 drachms.
Pulv. Rhei	2 ,,
Pulv. Ginger	2 ,,
Pulv. Cream Tartar	2 ,,
Sulphate of Ferri	10 grains.
Essence of Peppermint	4 drachms.
Aqua	15 ounces.

Dose.—Teaspoonful four times a day.

COLLYRIA.

Liquoris Plumbi Acetatis	12 drops.
Vini Opii	40 ,,
Aqua Rosæ	4 ounces.

Mix. Apply to weak eyes.

GONORRHŒA.

Hydrarg. Muriatis	2 grains.
Aquæ Distillatæ	8 ounces.

Dose.—Apply two or three times a day in gonorrhœal or scrofulous ophthalmia.

DRY COLLYRIUM OF SUGAR.

White Sugar	10 grains.
Oxide Zinci	10 ,,

Powder very fine.

INFLAMMATION.

Radicis Althæ Officinalis	2 ounces.
Aqua Distillatæ	16 ,,

Infuse for three hours near the fire and strain.

Useful in inflammation accompanied with much irritation.

ANODYNE COLLYRIUM.

Colchici Autumnalis	1 ounce.
Aquæ Lini Bullientis	4 ,,
Tinct. Opii	1 drachm.

Mix.

Useful in severe ophthalmia, where there is great sensibility.

WHOOPING COUGH.

Acidi Hydrocyanici Dilutum, Gtt.	25
Vini Ipecacuanhæ	2 fl. drachms.
Syr. Tolutan	1 ounce.
Aqua Distillatæ	3 ,,

Mix.

Dose.—Teaspoonful three or four times a day.

If the breathing is oppressed, or the symptoms present indicate the existence of bronchial inflammation, the administration of the sedative should be preceded by the exhibition of an emetic, and perhaps by the application of a few leeches to the chest.

NEURALGIA.

Extract Hyoscyami	½ drachm.
Morphiæ Sulphatis	3 grains.
Strychnæ	3 ,,
Pulv. Capsici	½ drachm.
Zinci Sulphatis	15 grains.

Mix. Make a mass and divide into thirty pills.

Dose.—One every three or four times a day.

In neuralgia the above pill has proved especially valuable in facial neuralgia, or in cases where the disease has been caused by malaria.

FERRATED COD-LIVER OIL.

Sulphate of Iron (precipitated by Alcohol)	2 parts.
Solution of Soda, sp. gr. 1·18	3·5 ,,
Water	10 ,,
Cod-Liver Oil	100 ,,

Add the soda solution to the cod-liver oil, mix them intimately, warm the mixture on a water-bath (original does not state exact temperature), and then add sulphate of iron, dissolved in ten parts of water. Now pass a brisk current of air for some time through the mixture, which will cause the temperature to rise to 85–95° C. Keep up the current of air and the same temperature continuously until the compound is formed, during which time the mixture will foam considerably, for which reason the vessel containing it should be only half filled. The time required for finishing the preparation depends partly upon the quantity of air, partly upon the bulk of the oil.

During the process, the iron is first converted into hydrated ferrous oxide, which is changed to ferric oxide by the oxygen of the air. The ferric oxide, *in statu nascente*, combines with the fatty acids to a soluble salt. The other step of the process—namely, the decomposition of the cod-liver oil—goes hand in hand with the former, one being dependent upon the latter. In this manner, a preparation is obtained which becomes perfectly clear on standing, has a dark garnet-red colour, and contains about 0·25 per cent. of iron. It cannot be said to have an agreeable odour or taste, which appear to be the more disagreeable the lower the percentage of iron. A more palatable mixture is obtained by adding two parts of pure cod-liver oil to three parts of the ferrated. The resulting mixture contains then about 0·15 per cent. of iron, which quantity will probably be satisfactory to most physicians.

CELLULAR DROPSY.

Extracti Conii	1 drachm.
Cantharadis Pulv.	40 grains.
Hydrarg. Submur	30 ,,
Ipecacuanhæ Pulv.	20 ,,

Mix. Make a mass and divide into forty pills.

Dose.—One, three or four times a day.

GASTRALGIA.

Tinct. Opii	3 drachms.
Tinct. Capsici	3 ,,
Ether Sulph.	3 ,,
Tinct. Camphor	3 ,,
Chloroform	1 ,,

Mix.

Dose.—Teaspoonful as may be required.

MOUTH WASHES.

The following are well recommended:—

Violet Mouth Wash.

Tincture of Orris	½ pint.
Oil of Rose	60 drops.
Oil of Bitter Almonds	5 ,,
Alcohol	1 pint.

Mix.

Eau Botot.

Tincture of Myrrh	¼ pint.
Tincture of Krameria	¼ ,,
Tincture of Cedar Wood (1 : 5)	1 ,,
Oil of Rose	10 drops.
Oil of Peppermint	15 ,,

Mix.

Botanic Styptic.

Myrrh	2 ounces.
Krameria	2 ,,
Cloves	2 ,,
Alcohol (50 per cent.)	2 pints.

Macerate fourteen days, and strain.

Tincture of Myrrh and Borax.

Borax	1 ounce.
Honey	1 ,,
Myrrh	1 ,,
Red Saunders	1 ,,
Alcohol (50 per cent.)	2 pints.

Triturate the honey and borax together in a mortar, then gradually add the alcohol, the myrrh and red saunders, and macerate fourteen days.

BEST TOOTH POWDER.

Precipitated Chalk	4 ounces.
Powdered Cuttle-bone	2 ,,
,, Orris Root	1½ ,,
,, Borax	½ ,,
Oil of Cloves	5 minims.
,, Wintergreen	2 fluid drachms.

Mix the powder thoroughly, and with a small portion add the oils and mix them until in the form of a moist powder. Then add the rest of the mixed powders until all are evenly distributed throughout. A solution of carmine can be added in with the oils, which will colour it as desired. Some prefer a preparation in the form of paste, as follows:—

CHERRY TOOTH PASTE.

Precipitated Chalk	4 ounces.
Powdered Areca Nut	1 ,,
,, Quillaya Bark (or Soap Root)	½ ,,
,, Cuttle-bone	1 ,,
,, Borax	½ ,,
,, Orris Root	4 ,,
Tincture of Myrrh	½ ,,
Oils of Nutmeg, Cloves, and Bitter Almonds, each	15 minims.
Oil of Rose	5 ,,

Honey, glycerine, and mucilage acacia, equal quantities of each sufficient to make into a paste of the desired consistence. First mix the powders and colour with carmine, and then add the other ingredients and thoroughly mix. Mouth washes are a valuable addition to the toilet, as they assist to harden and heal the gums, cleanse the mouth, and purify the breath.

ANTISEPTIC TOOTH WASH.

Salicylic Acid	12 parts.
Alcohol (95 per cent.)	315 ,,
Distilled Water	60 ,,
Oil of Wintergreen	15 ,,
Essence of Orange Flowers	15 ,,

Colour with tincture of cochineal. A few drops of carbolic acid may be added to the above in the case of decayed teeth and foul breath.

ALMOND MEAL.

The following formula is recommended for this useful cosmetic:—

Almond meal (in fine powder, prepared from blanched bitter almonds, after the oil has been extracted)	6 ounces.
Orris Root (in fine powder)	4 ,,
Wheat flour	4 ,,
White Castile Soap (in fine powder)	1 ,,
Borax (in fine powder)	1 ,,
Oil of Bitter Almonds	10 drops.
Oil of Bergamot	2 drachms.
Tincture of Musk	1 ,,

Mix thoroughly, and pass the mixture through a fine sieve.

KUMMERFELD'S LOTION.

This is intended as an emollient application to the skin, particularly of the face. Its composition is the following:—

Sublimed Sulphur	2 parts.
Glycerine	2 ,,

Triturate them together until they are thoroughly mixed; then add

Glycerine	10 parts.
Spirits of Camphor (1 : 10)	4 ,,
Spirits of Lavender	10 ,,
Cologne	10 ,,
Distilled Water	120 ,,

When wanted for use it should be well shaken up.

RHEUMATISM.

(*Kilner.*)

Fluid Extract of Prickly Ash	2 ounces.
Fluid Extract of Poke Root	2 ,,
Acetate of Potassa	½ ,,
Tincture of Guaiac Aro.	2 ,,
Iodide of Potass.	½ ,,
Vin. Colc. Seed	½ ,,
Tincture of Verbena	4 ,,
Sulphate of Morphia	10 grains.
Simple Syrup	4 ounces.
Fluid Extract of Black Cohosh	2 ,,

Dose.—Tablespoonful three times a day for adult.

DIARRHŒA.

Chlorate of Potassa	3 grains.
Tincture of Camphor	10 drops.
Brandy	1 ounce.
Syrup of Ginger	½ ,,
Extract of Nux Vomica	2 drops.

Mix. Take at a dose.

SPIRITS OF ORANGE.

Oil of Sweet Orange	1 ounce.
Alcohol	15 ,,

Mix and filter.

SOLUTION OF PEPSIN, OR LIQUID PEPSIN.

Take any good Pepsin, free from Lactic or Hydrochloric Acid	256 grains.
Muriatic Acid, c. p.	1 drachm.
Orange Flower Water	14 ounces.
Glycerine	2 ,,

Dissolve the pepsin in the acid, then add orange water; let stand twenty-four hours. Filter.

CAMPHOR CHLORAL.

Powdered Camphor	equal parts
Chloral Hydrate	

Rub together until dissolved. The above will make a liquid of the consistency of glycerine, and is very useful in neuralgia and toothache.

BROMIDIA.

Bromide of Potass.	4 ounces.
Chloral Hydrate	4 ,,
Solid Extract of Hyoscyamus	16 grains.
Solid Extract of Cannabis Indica	16 ,,
Alcohol	2 ounces.
Soft Water, to make	1 pint.

Rub the extract with the alcohol till dissolved. Rub the salts to a powder, and mix the solution with the extracts. Add the hot water. Triturate till dissolved, and filter.

KOUMIS.

Fresh Milk	1 gallon.
Brewer's Yeast	1 ounce.
White Sugar	3 ,,

Mix, and allow to stand from ten to fifteen hours, according to temperature, stirring occasionally; then strain, bottle, cork well, and tie down. It should now be kept at a temperature of 70°, or under, or the bottle may burst. The amount of yeast required will depend on the strength of the yeast and the temperature; too much yeast will make it bitter.

Koumis is a popular and healthful drink; age is said to increase its nutritive properties, but the fresh-made is more pleasant to the taste. The above formula will, with a little practice, furnish an article equal to the best.

CHOLERA INFANTUM.

(*Kilner.*)

Creosote	3 drops.
Chalk Mixture	1½ ounces.
Acetate of Lead	15 grains.
Acacia	½ ounce.

Mix. Form in emulsion.

Dose.—Half a teaspoonful every three hours, with the following:—

Calomel	10 grains.
Bismuth Sub. Nit	20 ,,
Powdered Opium	1 ,,
Pepsin	20 ,,

Dose.—Give as often as needed to act on the bowels.

BLACKING FOR HARNESS.

Treacle	½ pound.
Lampblack	1 ounce.
Yeast	1 teaspoonful.
Sugar-candy	1 ounce.
Olive Oil	1 ,,
Gum Tragacanth	1 ,,
Isinglass	1 ,,
Cow's Gall	1 ,,

Mix all together with two pints of stale beer, and let it stand before the fire one hour.

AGUE MIXTURE FOR CHILDREN.

Oxide of Arsenic	1 grain.
Sugar of Milk	99 ,,

Dose.—For a child two years old give two grains. For a child five years old give four to six grains.

PASTE FOR HARNESS.

Put into a pipkin black resin, 2 ounces, place on a gentle fire, and when melted add beeswax, 3 ounces. When this is melted remove from the fire, and stir in ½ ounce fine lampblack, and ½ drachm Prussian blue, finely powdered. When completely mixed, add spirits of turpentine to form a thin paste, and let it cool. To be applied like blacking.

AGUE MEDICINE FOR ADULTS.

Sulphate of Quinia	1 drachm.
Liquor Oxysulphate of Iron	2 ,,
Sul. Potas. Arsenious	2 ,,
Water	4 ounces.

Dose.—One teaspoonful four times a day.

LIQUID ASPHALTUM.

Asphaltum	4 parts.
Gum Turpentine	1 ,,

Melt, then add

Spirits of Turpentine	7 ,,

WATERPROOF VARNISH FOR BOOTS.

Linseed Oil	8 parts.
Boiled Oil	10 ,,
Suet	8 ,,
Beeswax	8 ,,

Mix with heat, and apply hot.

TO DETECT SULPHURIC ACID IN VINEGAR.

If into pure vinegar starch is introduced, then the adding of a minute portion of iodine will change its colour to a blue tint; but if sulphuric acid is present no such reaction will take place; for the resultant of starch in its presence is glucose, a substance not affected by iodine.

RIDGEWOOD'S DISINFECTANT.

In 100 parts, use of carbolic acid 5 to 8 per cent.; lime from magnesia limestone, 5 per cent.; Fuller's earth, 70 to 80 per cent., with a little sulphate of potash and sulphate of soda.

TO REMOVE INK FROM PAPER.

Wash alternately with a camel's-hair brush dipped in a solution of oxalic acid and cyanide of potassium.

GOADSBY'S SOLUTION.

(*For ordinary use in preserving specimens.*)

Alum	1 ounce.
Bay Salt	2 ,,
Corrosive Sublimate	1 grain.
Water	1 pint.

In very tender tissues, or where there is a tendency to mouldiness, use two grains of corrosive sublimate.

BARNET'S SOLUTION

Is made by adding scrap zinc to muriatic acid so long as any gas (hydrogen) is evolved.

It is largely used in the preservation of timber, and in embalming of dead bodies by throwing it into the aorta.

NURSING SORE MOUTH.

Chlorate Potass.	2 drachms.
Boiling Water	10 ounces.
Muriatic Acid . . .	40 drops.
Creosote	10 ,,
Alcohol	$\frac{1}{2}$ pint.

Dose.—Use as a gargle.

BURNS.

Iodoform	2 drachms.
Simple Cerate	1 ounce.
Extract of Conium	$\frac{1}{2}$ drachm.
Carbolic Acid	10 drops.

Mix. Apply twice a day on soft linen with oil silk.

CHRONIC CONSTIPATION.

Podophyllin	$\frac{1}{8}$ grain.
Extract of Belladona . . .	$\frac{1}{2}$,,
Extract of Nux Vomica . . .	$\frac{1}{4}$,,
Aloes	$\frac{1}{2}$,,
Oil of Cajeput	2 drops.

Make one pill.

Take one three or four times a day.

WRIGHT'S PEARL OINTMENT.

White Precipitate	8 ounces.
Goulard's Extract . . .	1 pint.
White Wax	7 pounds.
Olive Oil	10 ,,

Rub the Goulard's extract and the white precipitate to a cream, then add the white wax and olive oil previously melted together by a gentle heat. Stir till the ointment is nearly cold.

WATERPROOF CEMENT.

Soak pure glue in water until it is soft, then dissolve it in the smallest possible amount of proof spirits by the aid of gentle heat. In two ounces of this mixture dissolve ten grains of gum ammoniac, and while still liquid add half a drachm of mastic, dissolved in three drachms of rectified spirits. Stir well, and for use keep the cement liquefied in a covered vessel over a hot-water bath.

JAPANESE CEMENT.

Mix the best powdered rice with a little cold water, then gradually add boiling water until a proper consistency is acquired. Keep it well stirred all the time. Lastly, boil it for one minute in a clean saucepan. It is well adapted for light paper work.

CEMENT FOR CLOSING CRACKS IN STOVES.

This cement is prepared by mixing finely pulverised iron, such as can be procured at the druggist's, with liquid water glass, to a thick paste, and then coating the cracks with it. The hotter the fire becomes, the more does the cement melt and combine with its metallic ingredients, and the more completely will the crack become closed.

TRANSPARENT GLUE.

Proceed as in waterproof cement, using isinglass for glue.

YOUNG'S APERIENT DRINK.

Carbonate of Soda (crystals) .	$2\frac{1}{2}$ drachms.
Bitartrate of potassa ,, .	3 ,,
Cold Water	8 ounces.

Throw the carbonate of soda and the potassa into a soda-water bottle containing the water; cork, and keep it inverted till used.

HAIR RESTORER.

Sulp. Precip. . . .	26 grains.
Pulv. Cassiæ . . .	3 ,,
Glycerine . . .	$1\frac{1}{8}$ ounce by weight.
Plumb. Acet. Cryst. .	41 grains.
Aqua Distill. . .	$2\frac{1}{4}$ ounces.

Aromatised with a perfume containing nitro-benzole. The sugar of lead and the sulphur are first rubbed together, then the cassia and the water and the glycerine.

SOLUTION OF COPAIBA.

Copaiba	$1\frac{1}{2}$ pound.
Magnesia	12 ounces.
Alcohol	1 quart.
Nitrous Ether	2 ounces.

Triturate together copaiba and magnesia, then add the alcohol, filter, and lastly add the nitrous ether.

WATERPROOF CEMENT.

Shellac	4 ounces.
Borax	1 ,,

Boil in a little water until dissolved, and concentrate by heat to a paste.

RUBBER CEMENT.

Caoutchouc, cut in fine shreds, dissolved with four volumes of naphtha in a covered vessel, which should be left for several days.

Naphtha should not be used indoors.

CEMENT FOR HARD RUBBER.

Fuse together equal parts of gutta-percha and genuine asphaltum.

Apply hot to the joint, closing the latter immediately with pressure.

CEMENT TO RESIST PETROLEUM.

A cement peculiarly adapted to stand petroleum, or any of its distillates, is made by boiling three parts of resin with one of caustic soda and five of water. This forms a resin soap, which is afterwards mixed with half its weight of plaster Paris, zinc white, white lead or precipitated chalk. The plaster hardens in about forty minutes.

SIMPLE AND USEFUL CEMENT.

Alum and plaster Paris, well mixed in water and used in the liquid state, form a hard composition and also a useful cement.

TO MEND CROCKERY WARE.

Take lime and the white of an egg. To use it, take a sufficient quantity of the egg to mend one article at a time; shave off a quantity of lime and mix thoroughly. Apply quickly to the edges and place firmly together, when it will very soon become set and strong. Mix but a small quantity, as it hardens soon.

MARINE GLUE.

Caoutchouc	1 ounce.
Asphaltum (true)	2 ,,
Benzole, q. s.	

The caoutchouc is first dissolved by digestion and occasional agitation; then the asphaltum is gradually added.

This solution should have about the consistency of molasses.

CEMENT FOR PAPER OR RUBBER GOODS.

Fuse together equal parts of pitch and gutta-percha, and to this add about two parts of linseed oil, containing five parts of litharge; continue the heat until the ingredients are uniformly commingled. Apply warm.

CEMENT FOR IRON.

The following cement is recommended for repairing damaged places in cast-iron tanks, cisterns, etc.: Five parts brimstone, two parts black, and two parts of cast-iron filings, previously sifted, are melted together, taking care that the brimstone does not catch fire. The damaged place, perfectly dry, is well heated by laying a piece of red-hot iron upon it, and is then stopped with the cement previously heated in a melting ladle till it becomes soft.

CEMENT FOR REPAIRING GLASS.

Dissolve fine glue in strong acetic acid to form a thin paste.

CEMENT FOR METALS, LEATHER, RUBBER OR CLOTH.

Fuse together equal parts of gutta-percha and pitch. Use hot.

PATENT CASTOR OIL.

Glycerine	2 ounces.
Castor Oil	2 ,,
Oil of Cinnamon	1 drachm.

Mix. This compound will be found as sweet as honey and palatable for children.

PALATABLE COD-LIVER OIL.

Take four fresh eggs and pour over them sufficient lemon juice to cover them, let them remain for twenty-four hours, then pass the whole through a strainer, then add equal parts of cod-liver oil, glycerine, brandy, and a few drops of oil of wintergreen. This combination will keep a month in summer. It is a valuable agent in consumption. Taken in usual quantities.

FLY-PAPER POISON.

Chloride of Cobalt	6 drachms.
Brown Sugar	1½ ounce.
Boiling Water	1 pint.

Dissolve sugar and cobalt in water: saturate porous paper in the solution.

INCENSE POWDER.

Ground Gum Benzoin . . .	¼ pound.
Ground Cascarilla Bark . . .	¼ ,,
Ground Sandalwood . . .	½ ,,
Powdered Nitrate of Potass. . . .	1 ounce.
Grain Musk	10 grains.

RED SEALING-WAX.

Melt cautiously 4 ounces of pale shellac, in a copper vessel, at the lowest possible temperature; add 1¼ ounce of Venice turpentine, previously warmed, and stir in 3 ounces of vermilion; pour into metallic moulds, and allow it to cool.

BLACK SEALING-WAX.

Shellac	60 parts.
Venice turpentine	20 ,,

Melt shellac carefully; add Venice turpentine; stir in 30 parts of finely-powdered ivory black.

COMPOUND TINCTURE OF OPIUM, OR DIARRHŒA MIXTURE.

(*For use in time of Epidemic Cholera or Epidemic Diarrhœa.*)

Tincture of Opium	1 fl. ounce.
Spirits of Camphor	1 ,, ,,
Tincture of Capsicum	1 ,, ,,
Purified Chloroform	3 ,, drachm.

Add a sufficient quantity of stronger alcohol to make the whole measure 5 fluid ounces.

Each fluid drachm, or teaspoonful, contains about 100 drops, consisting of 12 minims of each of the first three ingredients, and 4½ mimims, or 18 drops, of chloroform.

Dose :—

Persons over 18 years	1 teaspoonful.
Persons 14 to 18 years	1 small teaspoonful.
Persons 10 to 14 years	½ teaspoonful.
Persons 6 to 10 years	30 drops.
Persons 2 to 6 years	10 to 30 drops.
Infants, according to age	1 to 10 „

In time of epidemic cholera or diarrhœa, when any person has two movements of the bowels more than natural within the twenty-four hours, the second one should be followed by a dose of this mixture, to be repeated after every movement that follows. If the movements increase in frequency or in copiousness after the second dose of the medicine has been taken, a physician should be sent for at once, and a double dose be taken after each movement until he arrives. Immediately after taking the first dose the person should go to bed, and remain there for twelve hours after the diarrhœa has entirely ceased.

OINTMENT FOR PIMPLED FACE, ETC.

Nitric Acid	1 ounce.
Quicksilver	1 „

Let this stand until the silver is set, then add lard melted, ½ pound. Mix and stir with a wooden spatula until cold.

AGATA'S DISINFECTANT.

Marble Dust	1 pound.

Oyster, cockle or sea shells of any description, powdered.

Copperas	8 ounces.
Carbolic Acid	1 „

Mix.

DISINFECTING POWDER.

Carbolate of Lime (freshly slacked)	40 ounces.
Marble Dust or Fine Sand	2 „
Carbolic Acid Crystals	3 drachms.

Mix carbolic acid with marble dust or sand, and then with other ingredients.

WINCHELL'S DISINFECTANT.

Copperas	24 ounces.
Salt (common)	14 „
Carbolic Acid (crude)	1 „
Sulphur	2½ „

Mix.

ANTI-RHEUMATIC MIXTURE.

Iodide of Potash	5 drachms.
Wine of Colchicum	1 ounce.
Tincture of Black Cohosh	2 „
Tincture of Stramonium	½ „
Paregoric	½ „

Dose.—Teaspoonful three times a day.

A GOOD AGUE REMEDY FOR CHILDREN, AS THE BITTER TASTE OF QUININE IS COMPLETELY DISGUISED.

Sulphate of Quinine	20 grains.
Bicarbonate of Soda	30 „
Fluid Extract of Licorice	3 drachms.
Peppermint Water	12 „

Dose.—Teaspoonful three or four times a day.

EPILEPSY.

Bromide of Soda	8 ounces.
Sulphate of Strychnia	½ grain.
Aqua Pura	1 pint.

Dose.—Teaspoonful three times a day.

ECZEMA DRYING SALVE.

Plumbi Glycerat.	1 drachm.
Ungt. Zinci Oxid.	1 ounce.

Mix.

KELLY'S TONIC.

Tinct. Nucis Vomicæ	2 drachms.
Acid Nitro Muriat. (diluted)	3 „
Tinct. Cinch. Com.	1½ ounce.
Tinct. Gentian Com., q. s. ad.	3 „

Dose.—Two drachms in water, three times per day.

HAMILTON'S TONIC.

Strychnia Sulph.	8 grains.
Cinchonida Sulph.	1 ounce.
Tinct. Chlo. Ferri.	6 „
Syr. Zingiberis	56 „
Acid Phosphoric (diluted)	2 „

Dose.—One-half to one teaspoonful three times per day.

FOR DIPHTHERIA.

Pilocarpin Muriate	1½ grain.
Pepsin	½ drachm.
Acid Muriatic	10 drops.
Aqua	8 ounces.

Dose.—Teaspoonful every hour.

RULES FOR ACTION VERY SHORT BUT VERY SAFE.

In health and disease endeavour always to live on the sunny side. Sir James Wylie, late physician to the Emperor of Russia, remarked, during long observation in the hospitals of that country, that the cases of death occurring in rooms averted from the light of the sun were four times more numerous than the fatal cases in the rooms exposed to the direct action of the solar rays. When poison is swallowed, a good off-hand remedy is to mix salt and mustard, one heaped teaspoonful of each, in a glass of water and drink immediately. It is quick in its operation. Then give the whites of two eggs in a cup of coffee, or the eggs alone if coffee cannot be had. For acid poisons give acids. In cases of opium-poisoning, give strong coffee and keep moving. For light burns or scalds, dip the part in cold water or in flour; if the skin is destroyed, cover with varnish. If you fall into the water, float on the back, with the nose and mouth projecting. For apoplexy, raise the head and body; for fainting, lay the person flat. Suck poisoned wounds, unless your mouth is sore; enlarge the wound, or, better, cut out the part without delay; cauterise it with caustic, the end of a cigar, or a hot coal. If an artery is cut, compress above the wound; if the vein is cut, compress below. If choked, get upon all-fours and cough. Before passing through smoke take a full breath, stoop low, then go ahead; but if you fear carbonic acid gas, walk erect and be careful. Smother a fire with blankets or carpets; water tends to spread burning oil and increase the danger. Remove dust from the eyes by dashing water into them, and avoid rubbing. Remove cinders, etc., with a soft, smooth wooden point. Preserve health and avoid catching cold by regular diet, healthy food, and cleanliness. Sir Astley Cooper said: "The methods by which I have preserved my own health are temperance, early rising, and sponging the body every morning with cold water immediately after getting out of bed—a practice which I have adopted for thirty years without ever catching cold." Water diluted with 2 per cent. of carbolic acid will disinfect any room or building, if liberally used as a sprinkle. Diphtheria can be cured by a gargle of lemon juice, swallowing a little so as to reach all the affected parts. To avert cold from the feet, wear two pairs of stockings made from different fabrics, one pair of cotton or silk, the other of wool, and the natural heat of the feet will be preserved if the feet are kept clean. In arranging sleeping-rooms the soundest and most refreshing slumber will be enjoyed when the head is towards the north. Late hours and anxious pursuits exhaust vitality, producing disease and premature death; therefore the hours of labour and study should be short. Take abundant exercise and recreation. Be moderate in eating and drinking, using simple and plain diet, avoiding strong drink, tobacco, snuff, opium, and every excess. Keep the body warm, the temper calm, serene, and placid; shun idleness; if your hands cannot be usefully employed, attend to the cultivation of your minds. For pure health-giving fresh air go to the country. Dr. Stockton Hough asserts that if all the inhabitants of the world were living in cities of the magnitude of London, the human race would become extinct in a century or two. The mean average of human life in the United States is 39¼ years, while in New York and Philadelphia it is only 23 years; about 50 per cent. of the deaths in these cities being of children under five years of age. A great percentage of this excessive mortality is caused by bad air and bad food.

TO ASCERTAIN THE STATE OF THE LUNGS.

Draw in as much breath as you conveniently can, then count as long as possible in a slow and audible voice without drawing in more breath. The number of seconds must be carefully noted. In a consumptive the time does not exceed ten, and is frequently less than six seconds; in pleurisy and pneumonia it ranges from nine to four seconds. When the lungs are sound the time will range as high as from twenty-five to thirty-five seconds. To expand the lungs, go into the air, stand erect, throw back the head and shoulders, and draw in the air through the nostrils as much as possible.

After having thus filled the lungs, raise your arms, still extended, and suck in the air. When you have thus forced the arms backward, with the chest open, change the process by which you draw in your breath, till the lungs are emptied. Go through the process several times a day, and it will enlarge the chest, give the lungs better play, and serve very much to ward off consumption.

THE CONSERVATION OF HEALTH.

This important object, so necessary to the enjoyment of life, can only be secured by conforming to an orderly state of existence. Every man is in duty bound to discharge with fidelity the debt which he owes to that frame so "fearfully and wonderfully made," and so well adapted by the Divine Contriver to fulfil the uses of life, by living with regularity and moderation, abstaining from every excess calculated to induce disease or inflict injury either on body or mind. Excessive intellectual labour is just as fatal in its degree as violent physical exertion. We have a lamentable proof of the truth of this remark in the sudden termination of a most useful life—that of the late Dr. Hall, editor of *Hall's Journal of Health*. As is well known, the fatal stroke was induced by an overworked brain, it being his habit to apply himself ardently to study, writing, etc., from five in the morning to ten in the evening—an imprudence all the more reprehensible as it was one which he was continually denouncing in others.

Business men are particularly liable to affections of the heart, resulting from trade anxieties, etc., and in the male the number of deaths from enlargement of the heart are as seven compared with five in the female. This phase of mortality is caused not only by intranquillity and worry of mind occasioned by lack of success in the grand struggles of life, but is too frequently brought on by conjugal infelicities and disturbances which seldom fail to accelerate a crisis which terminates in death. Many a well-meaning man lays plans which he fondly anticipates will result in securing to him and to those dependent on him an honestly-obtained competence, and, confident of prosperity, does his best endeavours, and often risks a great deal to ensure success, little dreaming of the poetic apothegm, that "the best-laid schemes o' mice and men gang aft aglee." The result too often is, as many know to their sorrow, entire failure; and subsequent reproaches, opprobrium, asperities, ascriptions of incapacity, etc., are showered on his head, and continued to the end of life, with more frequency and greater regularity than the dispensation of his daily bread, by the very one who should be all gentleness, all love, and her husband's chief comforter and consoler under misfortune. This is the most fatal kind of mental trouble, inasmuch as it involves a grinding grief of mind, which dissipates happiness, induces gloom, and tends to destroy life; whatever affects the love, which is the real man, or spirit, reacts upon and affects in an equal degree the body which contains that spirit. That this is so results from the correspondence existing between the soul and body, as may be palpably manifest to every one capable of interior reflection, and this to such a degree that to obtain convincing proof it is not necessary to extend the observations beyond his own experience.

Grief caused by financial loss and the reaction which sets in on retiring from business, after spending an active life in amassing a fortune, are also pregnant with evil results to health. No man has a right to retire from the duty of making himself useful to society, even if he has a fortune, and can afford to do so. If he does, this evil, like every other, is sure to work out its own retribution with a full harvest of unexpected misery.

Many of the influences which are potent for evil, and evil only, are self-inflicted, such as the habitual indulgence in alcoholic drinks, wine, beer, etc., the use of tobacco, opium, and other narcotics. Eighty-seven per cent. of all kidney diseases are induced by alcohol. Its continued use curtails vitality, destroys the membranes, generates disease in the brain, heart, spinal cord, lungs, liver, muscles, and blood vessels; it wrecks the system, impedes the circulation, paralyses manhood, and precipitates premature decay. Tobacco, also, in every form, exercises a most baneful effect on the health and mind.

A distinguished French savant, the Abbé Moigno, increased his daily allowance of snuff until in 1861 it was over twenty grammes, and he observed a rapid decay of the faculty of memory. He had learned some 1,500 root words in each of several languages, but found them gradually dropping out of his mind, so as to necessitate frequent reference to dictionaries. At last he summoned resolution to abandon its use, and after six years of abstinence writes as follows:—

"It was for us the commencement of a veritable resurrection of health, mind, and memory; our ideas have become more lucid, our imagination more vivid, our work easier, our pen quicker, and we have seen gradually return that army of words. Our memory, in a word, has recovered all its riches, all its sensibility. That tobacco, especially in the form of snuff, is a powerful enemy of memory, which it has destroyed little by little, and sometimes very promptly, cannot be doubted." With these known pernicious effects resulting from the use of alcoholic drinks and tobacco, abstinence from both becomes an imperious necessity.

Other most important auxiliaries to the maintenance of health are pure air, perfect ventilation in dwellings, and absolute cleanliness of person. Keill estimates the surface of the lungs at 150 cubit feet, or ten times that of the external body. During ordinary respiration, 16 or 17 cubic inches of atmospheric air pass into the lungs twenty times in a minute, or a cubic foot every 5·25 minutes; 274 cubic feet in twenty-four hours, or a cube of 6½ feet each way. The lungs generate 10·7 cubic feet of deadly carbonic acid gas, and remove from the atmosphere the same amount of oxygen, every twenty-four hours. The cause of nearly all the headaches in crowded factories, schools, and workshops, as well as all the sleeping and snoring in churches, is due more to vitiated air than to any other cause. To the same cause is owing the fearful mortality so prevalent in badly-ventilated city tenements, boarding-houses, cellars, etc., as well as in houses built on low levels, and boggy land near stagnant pools, inoperative sewers, imprisoned springs, etc. Bad air, imperfect ventilation, uncleanness, and ill health must ever go hand in hand. Decaying vegetable and animal matter yields various noxious gases, also expired breath; all enter the lungs, poison the blood, and permeate the system; therefore all impurities should be kept away from our abodes, and every precaution taken to secure pure air. Temperature of rooms should be about 60° Fahr.

As the solar rays exercise a benignant influence on health, and purify the air in dwellings, therefore admit the blessed sunlight without stint, for good health cannot exist without it.

As disinfectants, the following may be used with good effect:—1. Quicklime, to absorb moisture and putrid fluids. Use fresh lime, scattering it about, finely powdered, and whitewash with lime. 2. Charcoal powder, to absorb putrid gases. The coal should be dry and fresh, mixed with lime. 3. Chloride of lime, to give off chloride to absorb putrid effluvia and to stop putrefaction. 4. Sulphate of iron (copperas); 1 lb. dissolved in 1 qt. of water and poured down a water-closet will destroy the foulest smells. A quantity in an open pan will purify the air in rooms. 5. Fluid carbolic acid dissolved at the rate of 1 part to 100 or 150 parts of water is also very good.

Among diseases liable to be spread by the distribution of organic poisons may be mentioned scarlet fever, typhus fever, typhoid fever, yellow fever, measles, small-pox, diphtheria, infectious ophthalmia, hydrophobia, erysipelas, cholera, and glanders. The poisonous particles which effect contagion are in every instance of organic origin, and are evolved from matter composing living bodies. They float in the atmosphere, are inhaled by the breath, and are absorbed by the walls of dwellings, hospitals, etc., and are liable at any time to enter on a career of baneful activity. The walls of hospitals should be glass lined, the better to prevent contamination, and means should be used to destroy the contagious matter by means of chemical agents, such as powerful heat, nitrous acid gas, bromine, chlorine, iodine, sulphurous acid, etc. Solar light is another powerful disinfectant, and as a means of health has been ranked by Lavoisier as superior to pure air.

Dust is highly inimical to health, and it is everywhere present in the air we breathe. Its presence is made manifest in a manner perfectly startling, by admitting a beam of sunlight through an orifice into a dark room. It has a most pernicious effect on the health in cities, and indeed everywhere, but the air may be filtered from the noxious particles previous to entering the lungs by the use of a cotton-wool respirator. This contrivance possesses the further merit of being an effectual barrier to the admission to the lungs of those germs or poisonous particles whereby contagious disease is propagated.

Good health is impossible without pure water. The amount of organic and mineral impurities held in solution or suspension by water is perfectly astonishing, and wherever suspicion of such impurities exists, the water should be filtered. Good reliable filters may be purchased ready for immediate use, but wherever they cannot be obtained an excellent substitute may be made from an oak tub made to hold from half to a barrel of water, according to the needs of the family. Let it stand on end, with a faucet near the bottom, or, preferably, a hole through the bottom, near the front side, with a tube inserted to prevent the water from rotting the outside of the tub; then put clean pebbles three or four inches in thickness over the bottom of the tub. Spread a piece of clean white flannel over the pebbles; now have charcoal, pulverised to the size of small peas (that made from hard maple is best), and put in half a bushel or so at a time; pound it down quite firmly, then put in more, and pound again until the tub is filled to within eight inches of the top, and again put in two inches more of pebbles, then put a piece of clean white flannel over the whole top as a strainer. The flannel may be washed occasionally, to remove the impurities collected from the water, and it might be well to replenish the tub with fresh charcoal once a year at least. The result will be wholesome water.

Reckless exposure to cold, especially by aged and sensitive persons, should be carefully guarded against. During the winter months the body wastes, the loss of weight varying in an increasing ratio; during summer the body gains, the gain varying in an increasing ratio; and the changes from gain to loss, and from loss to gain, are sudden, and take place, the first at the beginning of September, and the second at the beginning of April. Deaths from pneumonia and bronchitis attain their maximum in the months of January, February, and March; in the succeeding three months they decline, and in the next quarter reach their minimum, recommencing to increase in October, November, and December. Air saturated with moisture tends to develop rheumatic disease, and organic diseases of the heart which spring from rheumatism.

During cold raw weather, aged persons should keep close to the house in apartments warmed by a cheerful, open, blazing fire, which is much preferable to the oppressive heat from a hot-air register, steam-pipes, or close stoves. If called out by business during a cold morning, do not go out too early, nor until after a good warm breakfast, and be sure to return before the chill of the evening. Add to the clothing early in the autumn, diminish it very gradually in the spring, eat with great moderation and regularity of nourishing diet, and take a daily nap on a lounge or in an armchair for fifteen or twenty minutes after dinner, or during the forenoon. If rest is broken during the night, make it up with prolonged rest during the morning, for, as a rule, those aged persons will live the longest who take the most rest and work the least, except in a very calm, placid, and unexcited way. During old age guard against haste, hurry, and excitement of body and mind, for nothing can be more dangerous to life.

Authors, clergymen, and all others engaged in intense mental study, should, whenever they become exhausted by severe brain labour, at once cease from further effort, and recuperate their expended energies by taking as much sleep as nature requires. Nothing soothes, strengthens, and invigorates the brain like refreshing sleep.

Clothing should not be worn in quantity to induce oppression or unnecessary smothering, but only enough to repel every feeling resembling chilliness. Keep a clean skin at all times, and as a safe precaution wear flannel next to it, as it possesses a powerful influence in modifying dangerous extremes of temperature. Dr. Pettenkofer states that equal surfaces of various materials are permeated by the air as follows: let flannel be taken as 100; linen of medium fineness, 58; silk, 40; buckskin, 58; chamois leather, 51; tanned leather, 1.

The dress should fit loosely, should be warm and light throughout, and frequently changed to remove the impurities exhaled through the skin. Clothing contaminated with excretory matter is highly inimical to health if worn too long. In cases of infectious disease, the sufferer should be isolated, and the infected clothing and bedding either destroyed or purified.

Sleeping apartments should be elevated, roomy, well ventilated, and kept at a temperature of about 60°. They should be free from direct draughts on the sleeper. The mattress should be hard, but may be easy and springy if so desired. Feathers should not be used, the emanations from them are most unhealthy, and they generate an excess of heat which is very enfeebling and unwholesome. The sweetest repose is obtained with the head towards the north,—with the bed insulated by means of glass interposed between the feet and the floor, to bar the passage of the electric currents, which are liable to leave the body depleted of strength unless they are retained. Guard against sleeping in new dwellings before the plaster and paint have become fully dry. Thousands of deaths, seemingly very mysterious and principally of aged persons, have taken place from neglect of this precaution. The natural allowance for sleep is eight hours out of the twenty-four, and the most favourable time is from ten o'clock until six. Intellectual labour is more exhausting than physical, consequently persons thus employed require more rest than working men. The most favourable position for sleep is on the right side; the worst is to lie on the back, as it generates a perilous heat over the region of the kidneys and spinal cord. Solitary repose is the most beneficial every way; when two parties sleep together, each one inhales a deleterious effluvia thrown off by his neighbour, and the weakest is always the greatest sufferer; more especially is this the case with children who sleep with aged persons. Add to this, electric changes are continually taking place, which frequently cause unrest, disquiet, and exhaustion, when two sleep together. Refreshing sleep gives rest to the brain and the nervous system. The retina is inert, the tympanum is placid, the nerves of taste, smell, and feeling are dormant, and all the powers of the cerebrum and cerebellum are quiescent. Children require more sleep than adults, and they should get all they will take of it, with a benediction and kind words to begin with. It is atrocious to think of the hard language, maledictions, and downright lies addressed to tender-hearted children by many parents on putting them to bed. They certainly are not aware of the grievous injury they inflict by such irrational conduct. Sleep is an absolute necessity to all animal existence, and when we think of its inestimable benefits and wonderful surroundings, we can only stand mute, and, with emotions inexpressible, refer their origin to that Infinite Love which "neither slumbers nor sleeps."

In dressing children, use care to keep them warm, keeping flannel to their skin during the entire year, especially covering the extremities well. There is a peculiar fashion, most deadly in its effects, which lets children run about with bare legs, arms, and necks, with the lower part of the dress expanded away from the person, thus admitting the chilling cold to do its worst. Such exposure would prove certain death to its parents in less than a month. Keep the extremities warm by keeping them well clothed, and thus keep up a free circulation, for cold feet and hands prevent health, and are the certain precursors of disease and death. Add to this plenty of good food, ripe fruit, and outdoor exercise *ad libitum*, and you will have rosy, blooming children as the result. In the matter of outdoor exercise, it might not be amiss to use a little wholesome oversight and restraint; let them have their full swing in the enjoyment of exercise calculated to develop the frame, such as running, jumping, playing ball, driving hoops, etc., but when it comes to every-day sport in the line of firing pistols, exploding fire-crackers, cracking whips, and an everlasting battering of toy drums, etc., then, I say, stop it at once, unless you wish to raise a dangerous boy and a dangerous man, for that is just the way to do it.

Children, or others who may be afflicted with impediments of speech, may be cured, if the remedy is not organic, by reading aloud for an hour or two every day, taking care to inhale air, and well fill the lungs, before reading each paragraph, as the cause of stammering in nine cases out of ten is the endeavour to speak when the lungs are empty. A celebrated and successful London stammerers' doctor charged fifty guineas for effecting cures by the method just noted.

It is only in civilised life that we find the most favourable conditions for health and longevity. The poets have expended much rapturous sentiment and romance about "the noble red man" in his native forest, but a personal investigation of the object of their effusions is very apt to cause a sudden revulsion of feeling. A filthy person, greasy blankets, rank skins, and other unsavoury surroundings are apt to make short work of high-strung ideas in the shape of poetry, romance, or sentiment. Of a verity, "cleanliness is next to godliness," and it is indeed a most auspicious token that the old mediæval ideas regarding the necessary connection between filth, poverty, and piety are notions belonging to the past. Human life has been absolutely lengthened by the addition of several years to a generation, compared with what it was a hundred years ago, all owing to the observance of sanitary laws, and it will continue to lengthen just in the proportion that these laws are respected.

Dr. Jarvis intimates that in ancient Rome, in the period of 200 to 500 years after the Christian era, the average duration of life in the most favoured class was 30 years, while in the present century the average longevity of persons of the same class is 50 years. In the sixteenth century, the average longevity in Geneva was 21·21 years; between 1814 and 1833 it was 40·68, and as large a proportion now live to 70 as lived to 43 300 years ago. In 1,000, only 228 medical men live from 63 to 72, and 328 theologians. In the last 50 years, the mean term of life seems to have increased from 33 to 41. In professions, of those who attain the age of 66, there are found to be 43 theologians, 40 agriculturists, 35 men in office, 32 military, 32 clerks, 29 advocates, 28 artists, 27 professors, and 24 medical practitioners.

When man, by an orderly life, passes through the various stages of a healthy existence, from childhood to youth, from youth to manhood, and from manhood to old age, during the decline of life he gradually approaches the verge of natural decay, and death takes place from the gradual effluxion of vitality. Few lives, comparatively speaking, terminate in this way, but when this consummation is attained, and death, purely natural, takes place, it must be regarded as much in the light of a blessing as is natural birth, for it is an orderly working out of a most wise and beneficent law, and the nearer advance we make to this natural limit of existence the better. Death is usually regarded as a curse, and as something very dreadful; there *is a death* which is indeed terrible beyond all powers of human conception; but natural death is not so, and is in no sense a calamity, but a wise provision of Infinite Mercy for man's highest good.

Harassing thoughts, mental anxiety, late hours, and worriment are fruitful causes of disease in healthy persons, and of death in cases of illness. Use every possible means to get rid of such feelings, and do not scruple to make use of such diversions or amusements as will effectually divert an invalid's thoughts from being too much engrossed with self. When nature calls for rest and recreation, do not neglect the warning. Guard against extreme fatigue of either body or mind, especially a complication of both together. Keep the passions under thorough control; in doing this the good old Quaker's rule will be found of great assistance—viz., never to allow himself to speak in a loud tone of voice. Nothing preserves health better than a placid temper. Exercise and physical training should not be neglected; persons engaged in sedentary employments should resort to exercise or rest on finding their thoughts become confused, and labourers should not carry their efforts to the verge of exhaustion; the heart's action is greatly injured thereby, and the bad effects will become permanent.

Of all peoples, the Jews are notably the longest-lived race; the reason is because they live orderly lives; they take care of themselves, so to speak, use proper food, and abstain from pork, which, from its liability to promote diseased conditions of the blood, and thence of the whole system, is decidedly injurious as an article of diet. The use of immoderate quantities of meat has an unhealthy influence on the body, and induces ferocity of the mind, as in Indians and others who subsist on it. Plutarch was astonished to think what appetite first induced man to taste of a dead carcase; and Pope said that the horrid and shocking sight of one of our modern kitchens gives one the image of a giant's den in romance, bestrewed with scattered heads and mangled limbs. Vegetable food is not liable to distend the vessels, load the system, or becloud the mind; but the heat, fulness, and weight of animal food are unfavourable to its efforts. *Cornaro*, the dietetic, allowanced himself to 12 ozs. of dry food and 14 ozs. of liquids per day, from the age of 40 to 100.

In eating, select good nourishing diet, so as to insure variety without excess, eat with regularity, without long intervals of abstinence, and eat leisurely. In drinking, avoid taking large draughts of cold water; drink with extreme moderation during meals, and avoid drinking water which has stood long in rooms or in lead pipes. Impure water is liable to produce malarial affections.

Tea and coffee, if used strong, and in large quantities, are certain to produce nervous irritability and brain excitement, but if used in moderation, and of mild strength, they are most refreshing and pleasant. Nervous persons will find coffee more soothing than tea, while persons of a different temperament will be better suited with the latter. Beyond all doubt, and for almost every purpose, in health and disease, pure water is the healthiest beverage, and it certainly is the natural drink of man. According to Hoffmann, "If there be any universal medicine it is water; for by its assistance all distempers are alleviated or cured, and the body preserved sound and free from corruption, that enemy to life." As Dr. Gall said of another subject, so the writer would say here, that "this is TRUTH, though at enmity with the philosophy of ages."

ON BATHING.

Nothing is of more transcendent importance to the maintenance of health than cleanliness, and this can only be obtained by the free use of water, in washing, sponging, and bathing. The modes of bathing are various; and, when rightly used, are most powerful for good. The rule is, the more robust the constitution of the patient, and higher his exterior temperature, the colder should be the water. In bathing it is always well to avoid taking a full bath within two hours after a meal, or when exhausted by fatigue, or when cooling after perspiration, or when feeling chilly. Do not drink cold water before bathing, nor eat soon after it. Females during the menstrual period, should never take cold baths. Never take a cold bath while the feet are cold. Never chill the body by standing or sitting on the banks during out-door bathing; enter the water while the body is warm, and avoid remaining too long in the water, leaving it on the first feeling of chilliness. Exercise before and after bathing is highly beneficial. Feeble and nervous persons should guard against powerful chilling shocks from cold water. The young and vigorous may bathe early in the morning on an empty stomach. Persons subjected to giddiness, faintness, palpitation, or other affections of the heart should use a cold bath with extreme caution.

THE COLD BATH,

Usually taken in the sea or in a river, temperature from 35° to 65° Fahr., has a most powerful, exhilarating, and tonic effect on the frame, and imparts a vigorous glow and stimulus to the system. It should not be continued longer than two or three minutes.

THE TEMPERATE BATH,

Ranging from 65° to 80° Fahr., is much preferable to the last for the use of invalids. Duration of bath should not be extended over three minutes, and the whole body should be thoroughly rubbed dry with a coarse towel, to induce a glow.

THE FULL WARM BATH,

Taken in the ordinary long bath tubs, as arranged by plumbers in dwellings, hotels, etc., is in the highest degree promotive of health and comfort. Fitted with hot and cold water connections, any desired temperature may be obtained, but for the best effect it should range from 90° to 98°; better under that than over it. The benefits will be increased by the use of carbonate of soda, 4 ounces to 30 gallons of water. This rids the system of much effete matter, promotes the cure of disease, and thoroughly cleanses the emunctories. After bathing, rub thoroughly dry.

THE HOT BATH,

Ranging from 98° to 112°, thoroughly stimulates the nervous system, but immersion cannot be prolonged over two or three minutes without permanent injury. Water scalds at 150°, but air heated to 260° is not painful. Delaroche could not remain more than ten minutes in a vapour bath at 100°. Berger was obliged to get out of a vapour bath at a temperature of 122° in twelve and a half minutes. The sensation in hot vapour resembles that of contact with boiling water. Fish actually live in hot baths up to 150°. Trees also grow in a bath at 170°; flowers near a volcano at 210°; and water-plants are found in boiling springs. The King's Bath at Bath is 116°, the hot bath is 117°, at Vichy 120, at Aix-la-Chapelle 140°. In the hot springs at Leuk, in Switzerland, the temperature of twenty springs varies from 95 to 125°; the baths are given at 98°, and, to make it as agreeable as possible, the patients bathe together, both men and women, dressed for the occasion. In the Hermbad, you may see the curious spectacle of people seated up to their necks in the bath, with coffee, books, cards, newspapers, work, etc., before them on little floating tables, or gossiping together or with their friends, who look on from the wooden gallery which runs around the wall. The waters are both drunk and bathed in, being considered excellent for weak nerves, palsy, diseases of the skin, and many chronic complaints. Elevation, 4,675 feet above the sea.

POOR MAN'S VAPOUR BATH.

Heat two or three bricks and place them under the patient's chair, sprinkle some water over the bricks, and cover the patient to keep in the steam; or a large lump of quicklime placed in a pan or old iron pot and sprinkled with water, or wrapped up in a wet, coarse towel. Neither of these methods, however, are at all comparable to the efficiency of a properly-administered vapour bath, either pure or medicated, in which the temperature of the steam, etc., can be regulated as follows: Temperature of tepid vapour bath, to be breathed, 90° to 100°, warm ditto 100° to 110°, hot ditto 110° to 130°; not to be breathed, tepid bath, 96° to 106°, warm 106° to 120°, hot 120° to 130°. These baths have performed wonders in cases of chronic rheumatism, stiffness of joints, indurations, diarrhœa, suppressions, etc.

THE SPONGE BATH

Is a means of health of such transcendent importance, that in the absence of other bathing facilities it should never be neglected for a single day. It is a powerful conserver of health, and affords positive relief in almost every phase of disease. The water may be used of any desired temperature. Apply with a towel or sponge, and when through polish off with a regular hard finish with a coarse towel, or, still better, two of them, well laid on, the last one dry, to induce a glow on the skin by friction.

Phrases and Abbreviations used in Prescriptions.—

Latin Word.	Abbreviation.	Translation.
Ad		To, up to.
Ad libitum	Ad lib	At pleasure.
Adde	Add	Let it or them be added.
Ampulla		A large bottle.
Ana	A aa	Of each.
Aqua-bulliens	Aq-bull	Water—boiling.
Aqua-fervens	Aq-ferv	Water—hot.
Aqua-destillata	Aq dest	Water distilled.
Bene		Well.
Bis in dies	Bis ind	Twice daily.
Bulliat, bulliant	Bull	Let boil.
Cape, Capiat	Cap	Take, Let him take.
Capsula	Caps	Capsule.
Ceratum	Cerata	A Cerate.
Charta (*Karta*)	Chart	A paper (medicated).
Chartula (*Kartula*)	Chart	A little paper for a powder.
Cibus	Cib	Food.
Cochleare magnum	Coch mag	A tablespoonful.
Cochleare parvum	Coch parv	A teaspoon.
Cola, Colatus	Col	Strain, Strained.
Collyrium	Collyr	An eye-wash.
Collutorium	Collut	A mouth-wash.
Compositus	Co. Comp	Compound.
Congius	C.	A gallon.
Confectio	Conf	A confection.
Cortex	Cort	Bark.
Cum		With.
Decoctum	Decoc	A decoction.
Dilute, Dilutus	Dil	Dilute.
Dimidius	Dim	One-half.
Divide	D. Div	Divide (thou.)
Dividendus	Dividend	To be divided.
Dividatur in partes æquales	D in p æq	Let it be divided into equal parts.
Dosis	Dos	A dose.
Emplastrum	Emp	A plaster.
Enema	Enem	An enema.
Extende supra	Exten Sup	Spread upon.
Extractum	Ext	An extract.
Fac, fiat, fiant	F	Make, Let it be made.
Filtrum	Fil	A filter, Filter (thou).
Fluidus	Fl. f	Fluid.
Gargarisma	Garg	A gargle.
Glyceritum	Glyc	A Glycerite.
Gutta, Guttæ	Gtt	A drop, Drops.
Guttatim	Guttat	Drop by drop.
Haustus	Haust	A draught.
In dies	Ind	Daily.
Infusum	Inf	An infusion.
Injectio	Inj	An injection.
Instar	Inst	Like.
Lac		Milk.
Layena		A flask or bottle.
Libra	Lb ℔	A pound.
Linteum		Lint.
Liquor	Liq	A solution.
Lotio		A lotion.
Mane primo	Mane pr	Very early in the morning.
Magnus	Mag	Large.
Massa	Mass	A pill mass.
Mica panis	Mic pan	A crumb of bread.
Misce	M	Mix.
Mistura	Mist	A mixture.
Mucilago	Mucil	A mucilage.
Nox, Nocte Maneque		Night; At night and in the morning.
Numens Numero	No	A number, In number.
Octarius	O.	A pint.
Ovum, Ovi	Ov	An egg.
Optimus	Opt	Best.
Pars	Par	A part.
Partes æquales	Pæ	Equal parts.
Parvus	Parv	Small.
Pediluvium		A foot bath.
Pencilium Camelinum	Pencil Cam	A camel's hair pencil or brush.
Per fistulam vitreum		Through a glass tube.
Phiala	Phil	A vial.
Pilula	Pil	A pill.
Pro re nata	P r n	According to circumstances, occasionally.
Pulvis	Pulv	A powder.
Quantum Sufficit	Q S	As much as is necessary.
Quadqua hora	Q h	Every hour.
Saturatus	Sat	Saturated.
Scatula	Scat	A box.
Semissis	Ss	A half.
Semidrachma	Semidr	A half drachm.
Sesuncia	Sesunc	An ounce and a half.
Signa	S Sy	Sign.
Sine		Without.
Solve, Solutus	Solv	Dissolve, Dissolved.
Solutio	Sol	A solution.
Spiritus	Spr	A spirit.
Statim	Stat	Immediately.
Suppositoria	Suppos	A suppository.
Syrupus	Syr	A syrup.
Talis	Tal	Such or like.
Tinctura	Tra Tr Tinc	A tincture.
Trochiscus (*Trokiscus*)	Troch	A troche.
Tritura	Trit.	Triturate.
Tere Simul	Ter Sim	Rub together.
Ter in di	T i d	Three times a day.
Unguentum	Ungt	An ointment.
Vinum	Vin	A wine.
Vehiculum	Vehic	A menstrum.
Vitellus	Vit	The yolk (of an egg).
Vitello Ovi Solutus	V O S	Dissolved in yolk of an egg.

Symbols or Signs used in Prescriptions:—

♏. Minim, 1-60th part of a fluid drachm.
gtt. Gutta, drop; guttæ, drops.
℈j. Scrupulus vel scrupulum, a scruple = 20 grains.
ʒj. Drachma, a drachm = 60 grains.
fʒj. Fluidrachma, a fluid or measured drachm.
℥j. Uncia, a troy ounce = 480 grains.
f℥j. Fluiduncia, a fluid ounce.
℔j. Libra, a pound, understood in prescription to apply to an officinal pound of 5,760 grains.
Oj. Octarius, a pint.
gr. Granum, a grain; plural grana, grains.
ss. Semis, half, affixed to signs as above.

Table to Assist the Beginner in Prescribing Liquids.—Having fixed upon the bulk of his liquid he will remember that there are in

1 fluid ounce, 8 teaspoonfuls each 1 fluid drachm.
2 fluid ounces, 15 teaspoonfuls each 1 fluid drachm.
4 fluid ounces, 30 teaspoonfuls each 1 fluid drachm.
4 fluid ounces, 15 dessertspoonfuls each 2 fluid drachms.
6 fluid ounces, 20 dessertspoonfuls each 2 fluid drachms.
6 fluid ounces, 12 tablespoonfuls each ½ fluid ounce.
8 fluid ounces, 15 tablespoonfuls each ½ fluid ounce.
1 pint, 30 tablespoonfuls, each ½ fluid ounce.
1 pint, 8 wineglassfuls each 2 fluid ounces.

Approximate Measures.—

A drop = usually about ½ minim.
A teaspoonful = 60 drops f ʒj.
A dessertspoonful = f ʒij.
A teaspoonful = f ℥ss.
A wineglassful = f ℥ ij.
A teacupful = f ℥ix.

ACCIDENTS AND INJURIES, AND HOW TO MEET THEM.

As accidents are constantly liable to occur, the importance of knowing how best to meet the various emergencies that may arise can hardly be over-estimated. In all cases, and under all circumstances, the best help to assist a party in this trying moment is *presence of mind.*

Harvest Bug Bites.—The best remedy is the use of benzine, which immediately kills the insect. A small drop of tincture of iodine has the same effect.

Bites and Stings of Insects, such as bees, wasps, hornets, etc., although generally painful, and ofttimes causing much disturbance, yet are rarely attended with fatal results. The pain and swelling may generally be promptly arrested by bathing freely with a strong solution of equal parts of common salt and baking soda, in warm water; or by the application of spirits of hartshorn; or of volatile liniment (one part of spirits of hartshorn and two of olive oil). In the absence of the other articles, warm oil may be used; or, if this is not at hand, apply a paste made from fresh clay-earth. If the sting of the insect is left in the wound, as is frequently the case, it should always be extracted. If there is faintness, give some stimulant; as a tablespoonful or two of brandy and water, or brandy and ammonia.

Mad Dog Bites.—1. Take immediately warm vinegar or tepid water; wash the wound clean therewith and then dry it; pour upon the wound, then, ten or twelve drops of muriatic acid. Mineral acids destroy the poison of the saliva, by which means the evil effects of the latter are neutralized. 2. Many think that the only sure preventive of evil following the bite of a rabid dog is to suck the wound immediately, before the poison has had time to circulate with the blood. If the person bit cannot get to the wound to suck it, he must persuade or pay another to do it for him. There is no fear of any harm following this, for the poison entering by the stomach cannot hurt a person. A spoonful of the poison might be swallowed with impunity, but the person who sucks the place should have no wound on the lip or tongue, or it might be dangerous. The precaution alluded to is a most important one, and should never be omitted prior to an incision and the application of lunar caustic in every part, especially the interior and deep-seated portions. No injury need be anticipated if this treatment is adopted promptly and effectively. The poison of hydrophobia remains latent on an average six weeks; the part heals over, but there is a pimple or wound, more or less irritable; it then becomes painful, and the germ, whatever it is, ripe for dissemination into the system, and then all hope is gone. Nevertheless, between the time of the bite and the activity of the wound previous to dissemination, the caustic of nitrate of silver is a sure preventive; after that it is as useless as all the other means. The best mode of application of the nitrate of silver is by introducing it solidly into the wound.

Serpent Bites.—The poison inserted by the stings and bites of many venomous reptiles is so rapidly absorbed, and of so fatal a description, as frequently to occasion death before any remedy or antidote can be applied; and they are rendered yet more dangerous from the fact that these wounds are inflicted in parts of the country and world where precautionary measures are seldom thought of, and generally at times when people are least prepared to meet them. 1. In absence of any remedies, the first best plan to adopt on being bitten by any of the poisonous snakes is to do as recommended above in Mad Dog Bites—viz., to wash off the place immediately; if possible get the mouth to the spot, and forcibly suck out all the poison, first applying a ligature above the wound as tightly as can be borne. 2. A remedy promulgated by the Smithsonian Institute is to take 30 grs. iodide potassium, 30 grs. iodine, 1 oz. water, to be applied externally to the wound by saturating lint or batting—the same to be kept moist with the antidote until the cure be effected, which will be in one hour, and sometimes instantly. 3. An Australian physician has tried and recommends carbolic acid, diluted and administered internally every few minutes until recovery is certain. 4. Another Australian physician, Professor Halford, of Melbourne University, has discovered that if a proper amount of dilute ammonia be injected into the circulation of a patient suffering from snake-bite, the curative effect is usually sudden and startling, so that, in many cases, men have thus been brought back, as it were, by magic, from the very shadow of death.

Bleeding at the Nose.—1. Roll up a piece of paper, and press it under the upper lip. 2. In obstinate cases blow a little gum-arabic up the nostrils through a quill, which will immediately stop the discharge; powdered alum is also good. 3. Pressure by the finger over the small artery near the ala (wing) of the nose, on the side where the blood is flowing, is said to arrest the hemorrhage immediately.

Bleeding from the Lungs.—A London physician has related a case in which inhalation of very dry persulphate of iron, reduced to a palpable powder, entirely arrested bleeding from the lungs, after all the usual remedies, lead, opium, etc., had failed. A small quantity was administered by drawing into the lungs every hour during part of the night and following day.

Bleeding from the Bowels.—The most common cause of this, when not a complication of some disease, is hemorrhoids, or piles. Should serious hemorrhage occur, rest and quiet, and cold water poured slowly over the lower portion of the belly, or cloths wet with cold water, or better, with ice water, applied over the belly and thighs, and to the lower end of the bowels, will ordinarily arrest it. In some cases it may be necessary to use injections of cold water, or even put small pieces of ice in the rectum.

Bleeding from the Mouth.—This is generally caused by some injury to the cheeks, gums, or tongue, but it sometimes occurs without any direct cause of this kind, and no small alarm may be caused by mistaking it for bleeding from the lungs. Except when an artery of some size is injured, bleeding from the mouth can generally be controlled by gargling and washing the mouth with cold water, salt and water, or alum and water, or some persulphate of iron may be applied to the bleeding surface. Sometimes obstinate or even alarming bleeding may follow the pulling of a tooth. The best remedy for this is to plug the cavity with lint or cotton wet with the solution of persulphate of iron, and apply a compress, which may be kept in place by closing the teeth on it.

Bleeding from the Stomach.—*Vomiting blood.*—Hemorrhage from the stomach is seldom so serious as to endanger life; but as it may be a symptom of some dangerous affection, it is always best to consult a physician concerning it. In the meantime, as in all other varieties of hemorrhage, perfect quiet should be preserved. A little salt, or vinegar, or lemon juice, should be taken at intervals, in a small glass of fresh cool water, or ice water, or ice may be swallowed in small pieces, and cloths wet with ice water, or pounded ice, applied over the stomach.

Bleeding from Varicose Veins.—Serious and even fatal hemorrhage may occur from the bursting of a large varicose or "broken" vein. Should such an accident occur, the bleeding may be best controlled, until proper medical aid can be procured, by a tight bandage; or a "stick tourniquet," remembering that the blood comes toward the heart in the veins, and from it in the arteries. The best thing to prevent the rupture of varicose or broken veins is to support the limb by wearing elastic stockings, or a carefully applied bandage.

Burns and Scalds.—There is no class of accidents that cause such an amount of agony, and none which are followed with more disastrous results. 1. By putting the burned part under cold water, milk, or other bland fluid, instantaneous and perfect relief from all pain will be experienced. On withdrawal, the burn should be perfectly covered with half an inch or more of common wheaten flour, put on with a dredging-box, or in any other way, and allowed to remain until a cure is effected, when the dry, caked flour will fall off, or can be softened with water, disclosing a beautiful, new, and healthy skin, in all cases where the burns have been superficial. 2. Dissolve white lead in flaxseed oil to the consistency of milk, and apply over the entire burn or scald every five minutes. It can be applied with a soft feather. This is said to give relief sooner, and to be more permanent in its effects, than any other application. 3. Make a saturated solution of alum (four ounces to a quart of hot water). Dip a cotton cloth in this solution and apply immediately on the burn. As soon as it becomes hot or dry, replace it by another, and continue doing so as often as the cloth dries, which at first will be every few minutes. The pain will immediately cease, and after twenty-four hours of this treatment the burn will be healed; especially if commenced before blisters are formed. The astringent and drying qualities of the alum will entirely prevent their formation. 4. Glycerine, five ounces; white of egg, four ounces; tincture of arnica, three ounces. Mix the glycerine and white of egg thoroughly in a mortar, and gradually add the arnica. Apply freely on linen rags night and morning, washing previously with warm Castile soap-suds. 5. Take one drachm of finely-powdered alum, and mix thoroughly with the white of two eggs and one teacup of fresh lard; spread on a cloth, and apply to the parts burnt. It gives almost instant relief from pain, and, by excluding the air, prevents excessive inflammatory action. The application should be changed at least once a day. 6. M. Joel, of the Children's Hospital, Lausanne, finds that a tepid bath, containing a couple of pinches of sulphate of iron, gives immediate relief to young children who have been extensively burned. In a case of a child four years old, a bath repeated twice a day—twenty minutes each bath—the suppuration decreased, lost its odour, and the little sufferer was soon convalescent. 7. For severe scalding, carbolic acid has recently been used with marked benefit. It is to be mixed with thirty parts of the ordinary oil of lime water to one part of the acid. Linen rags saturated in the carbolic emulsion are to be spread on the scalded parts, and kept moist by frequently smearing with the feather dipped in the liquid. Two advantages of this mode of treatment are, the exclusion of air, and the rapid healing by a natural restorative action without the formation of pus, thus preserving unmarred the personal appearance of the patient—a matter of no small importance to some people.

Choking.—In case of choking, a violent slap with the open hand between the shoulders of the sufferer will often effect a dislodgment. In case the accident occurs with a child, and the slapping process does not afford instant relief, it should be grasped by the feet, and placed head downwards, and the slapping between the shoulders renewed; but in case this induces violent suffocative paroxysms, it must not be repeated. If the substance, whatever it may be, has entered the windpipe, and the coughing and inverting the body fail to dislodge it, it is probable that nothing but cutting open the windpipe will be of any avail; and for this the services of a surgeon should always be procured. If food has stuck in the throat or gullet, the forefinger should be immediately introduced; and if lodged at the entrance of the gullet, the substance may be reached and extracted, possibly, with the forefinger alone, or may be seized with a pair of pincers, if at hand, or a curling tongs, or anything of the kind. This procedure may be facilitated by directing the person to put the tongue well out, in which position it may be retained by the individual himself, or a bystander by grasping it, covered with a handkerchief or towel. Should this fail, an effort should be made to excite retching or vomiting by passing the finger to the root of the tongue, in hopes that the offending substance may in this way be dislodged; or it may possibly be effected by suddenly and unexpectedly dashing in the face a basin of cold water, the shock suddenly relaxing the muscular spasm present, and the involuntary gasp at the same time may move it up or down. If this cannot be done, as each instant's delay is of vital importance to a choking man, seize a fork, a spoon, a pen-holder, pencil, quill, or anything suitable at hand, and endeavour to push the article down the throat. If it be low down the gullet, and other means fail, its dislodgment may sometimes be effected by dashing cold water on the spine, or vomiting may be induced by an emetic of sulphate of zinc (twenty grains in a couple of tablespoonfuls of warm water), or of common salt and mustard in like manner, or it may be pushed into the stomach by extemporizing a probang, by fastening a small sponge to the end of a stiff strip of whalebone. If this cannot be done, a surgical operation will be necessary. Fish bones, or other sharp substances, when they cannot be removed by the finger or forceps, may sometimes be dislodged by swallowing some pulpy mass, as masticated bread, etc. Irregularly shaped substances, a plate with artificial teeth for instance, can ordinarily be removed only by surgical interference.

Colic.—Use a hot fomentation over the abdomen, and a small quantity of ginger, peppermint, or common tea. If not relieved in a few minutes, then give an injection of a quart of warm water with twenty or thirty drops of laudanum, and repeat it if necessary. A half teaspoonful of chloroform, in a tablespoonful of sweetened water, with or without a few drops of spirits of lavender or essence of peppermint, will often give prompt relief.

Convulsions.—In small children convulsions frequently happen from teething, sometimes from worms or from some irritating substance within the stomach or bowels, and sometimes from some affection of the brain. When a child has convulsions, place it immediately in a warm or hot bath, and sponge its head with cold water. Then apply a hot mustard plaster to the wrists, ankles, and soles of the feet, or, in case a plaster cannot be obtained, apply a cloth wrung out of hot mustard water. Allow these to remain until the skin reddens, and use care that the same does not blister. After the fit has subsided, use great care against its return by attention to the cause which gave rise to it. Convulsions in adults must be treated in accordance with the manner which gave rise to them. During the attack great care should be taken that the party does not injure himself, and the best preventive is a cork or a soft piece of wood, or other suitable substance, placed between the teeth to prevent biting the tongue and cheeks: tight clothing must be removed or loosened; mustard poultices should be applied to the extremities and over the abdomen; abundance of fresh air should be secured by opening windows and doors, and preventing unnecessary crowding of persons around; cold water may be dashed on the face and chest; and if there be plethora, with full bounding pulse, with evidence of cerebral or other internal congestion, the abstraction of a few ounces of blood may be beneficial.

Cramp.—Spasmodic or involuntary contractions of the muscles, generally of the extremities, accompanied with great pain. The muscles of the legs and feet are the most commonly affected with cramp, especially after great exertion. The best treatment is immediately to stand upright, and to well rub the part with the hand. The application of strong stimulants, as spirits of ammonia, or of anodynes, as opiate liniments, has been recommended. When cramp occurs in the stomach, a teaspoonful of sal-volatile in water, or a dram glassful of good brandy, should be swallowed immediately. When cramp comes on during cold bathing, the limb should be thrown out as suddenly and violently as possible, which will generally remove it, care being also taken not to become flurried nor frightened, as presence of mind is very essential to personal safety on such an occasion. A common cause of cramp is indigestion, and the use of acescent liquors; these should be avoided.

Cuts.—In case the flow of blood is trifling, stop the bleeding by bringing the edges of the wound together. If the flow of blood is great, of a bright vermilion colour, and flows in spurts, or with a jerk, an artery is severed, and at once should pressure be made on the parts by the finger (between the cut and the heart), until a compress is arranged by a tight ligature above the wounded part. Then the finger may be taken off, and if the blood still flows, tighten the handkerchief or other article that forms the ligature, until it ceases. If at this point the attendance of a physician or surgeon cannot be secured, take strong silk thread, or wax together three or four threads, and cut them into lengths of about a foot long. Wash the parts with warm water, and then, with a sharp hook or small pair of pincers in your hand, fix your eye steadfastly upon the wound, and directing the ligature to be slightly released, you will see the mouth of the artery from which the blood springs. At once seize it, draw it out a little, while an assistant passes a ligature round it, and ties it up tight with a double knot. In this way take up in succession every bleeding vessel you can see or get hold of. If the wound is too high up in a limb to apply the ligature, do not lose your presence of mind. If it is the thigh, press firmly on the groin; if in the arm, with the hand-end or ring of a common door-key make pressure above the collar-bone, and about its middle, against its first rib, which lies under it. The pressure should be continued until assistance is procured and the vessel tied up. If the wound is on the face, or other place where pressure cannot effectually be made, place a piece of ice directly over the wound, allowing it to remain there until the blood coagulates, when it may be removed, and a compress and bandage be applied. After the bleeding is arrested, the surrounding blood should be cleared away, as well as any extraneous matter; then bring the sides of the wound into contact throughout the whole depth, in order that they may grow together as quickly as possible, retaining them in their position by strips of adhesive plaster. If the wound be deep and extensive, the wound itself and the adjacent parts must be supported by proper bandages. The position of the patient should be such as will relax the skin and muscles of the wounded part. Rest, low and unstimulating diet, will complete the requirements necessary to a speedy recovery.

How to Distinguish Death.—As many instances occur of parties being buried alive, they being to all appearance dead, the great importance of knowing how to distinguish real from imaginary death need not be explained. The appearances which mostly accompany death are an entire stoppage of breathing, of the heart's action; the eyelids are partly closed, the eyes glassy, and the pupils usually dilated; the jaws are clenched, the fingers partially contracted, and the lips and nostrils more or less covered with frothy mucus, with increasing pallor and coldness of surface, and the muscles soon become rigid and the limbs fixed in their position. But as these same conditions may also exist in certain other cases of suspended animation, great care should be observed, whenever there is the least doubt concerning it, to prevent the unnecessary crowding of the room in which the corpse is, or of parties crowding around the body; nor should the body be allowed to remain lying on the back without the tongue being so secured as to prevent the glottis or orifice of the windpipe being closed by it; nor should the face be closely covered, nor rough usage of any kind be allowed. In case there is great doubt, the body should not be allowed to be inclosed in the coffin, and under no circumstances should burial be allowed until there are unmistakable signs of decomposition. Of the numerous methods proposed as signs for real death, we select the following: 1. So long as breathing continues, the surface of a mirror held to the mouth and nostrils will become dimmed with moisture. 2. If a strong thread or small cord be tied tightly round the finger of a living person, the portion beyond the cord or thread will become red and swollen—if dead, no change is produced. 3. If the hand of a living person is held before a strong light, a portion of the margin or edges of the fingers is translucent—if dead, every part of it is opaque. 4. A coal of fire, a piece of hot iron, or the flame of a candle, applied to the skin, if life remains, will blister—if dead, it will merely sear. 5. A bright steel needle introduced and allowed to remain for half an hour in living flesh will be still bright—if dead, it will be tarnished by oxydation. 6. A few drops of a solution of atropia (two grains to one-half ounce of water) introduced into the eye, if the person is alive, will cause the pupils to dilate—if dead, no effect will be produced. 7. If the pupil is already dilated, and the person is alive, a few drops of tincture of the calabar bean will cause it to contract—if dead, no effect will be produced.

Dislocations.—These injuries can mostly be easily recognised: 1. By the deformity that the dislocation gives rise to by comparing the alteration in shape with the other side of the body. 2. Loss of some of the regular movements of the joints. 3. In case of dislocation, surgical aid should be procured at once. While waiting the arrival of a physician, the injured portion should be placed in the position most comfortable to the patient, and frequent cold bathing, or cloths wrung out of cold water, applied to the parts affected, so as to relieve suffering and prevent inflammation.

Foreign Bodies in Ear.—Great care should be taken in removing foreign bodies from the ear, as serious injury may be inflicted. Most foreign bodies, especially those of small size, can be easily removed by the use of a syringe with warm water, and in most cases no other means should be used. Should the first efforts fail, repeat the operation. A syringe throwing a moderately small and continuous stream is the best adapted for the purpose, and the removal may generally be facilitated by inclining the ear downward while using the syringe. Severe inflammation may be excited, and serious injury done, by rash attempts to seize a foreign body in the ear with a forceps or tweezers, or trying to pick it out with a pin or needle, or with an ear scoop. Should it be necessary from any cause to use instruments, great care should be observed, and but very little force exerted. It has lately been recommended, when foreign bodies cannot be removed by syringing the ear, to introduce a small brush or swab of frayed linen or muslin cloth, or a bit of sponge, moistened with a solution of glue, and keep it in contact with the foreign body until the glue adheres, when the body may be easily removed.

Insects in the Ear.—Insects in the ear may be easily killed by pouring oil in the ear, after which remove by syringing.

To Remove Hardened Ear Wax.—Hardened ear wax may be softened by dropping into the ear some oil or glycerine, and then syringing.

Foreign Bodies in Eye.—To remove small particles from the eye, unless they have penetrated the globe, or become fixed in the conjunctiva, do as follows: Grasp the upper lid between the thumb and forefinger, lift it from the eyeball, and having drawn it down as far as possible outside the lower lid, let it slide slowly back to its place, resting upon the lower lid as it goes back; and then wipe the edges of the lids with a soft handkerchief to remove the foreign substance. This may be repeated a number of times, if necessary, without injury. Should this means fail, evert the lids and remove the foreign substance by touching it lightly with the fold of a handkerchief, or with the point of a roll of paper made like a candle lighter; or, if necessary, with a small pair of forceps. A drop of sweet oil instilled in the eye, while perfectly harmless, provokes a flow of tears that will frequently wash away any light substance. Bits of metal, sharp pieces of sand, etc., sometimes penetrate the globe of the eye, and, unless removed, may excite so much inflammation as to destroy the eye. They should be removed by a competent surgeon.

Fainting.—Lay the person who has fainted in a current of air, or in such a position that the air from an open window or door will have full play upon the face. Do not allow parties to crowd closely around, but give the sufferer plenty of room. Recovery will take place in a few minutes. The clothes also may be opened, and cold water sprinkled upon the face, hands, and chest; and some pungent substance, as smelling salts, camphor, aromatic vinegar, etc., may be applied to the nostrils; and as soon as able to swallow, a little fresh water, or spirits and water, may be given. Persons who faint easily should avoid crowded rooms and places where the air is close.

Fits.—See Convulsions.

Clothing on Fire.—If a woman's clothes catch on fire, let her instantly roll herself over and over on the ground. In case any one be present, let them throw her down and do the like, and then wrap her up in a tablecloth, rug, coat, or the first woollen article that can be found.

Fractures.—As we can only give general rules for treating the various fractures, we would advise any one suffering from such to immediately apply to the nearest surgeon, and not rely upon an inexperienced party.

Frost-Bite.—Place the party suffering in a room without fire, and rub the frozen or frosted parts with snow, or pour ice water over them until sensation begins to return. As soon as a stinging pain is felt, and a change of colour appears, then cease the rubbing, and apply clothes wet with ice water, and subsequently, if active inflammation follow, and suppuration results, a solution of carbolic acid in water, one part to thirty, should be applied. If mortification set in, amputation is generally necessary. Where persons suffer from the constitutional effects of cold, hot stimulants should be given internally, and the body rubbed briskly with the hands and warm flannel.

Poisons: their Symptoms and Antidotes.—When a person has taken poison, the first thing to do is to compel the patient to vomit, and for that purpose give any emetic that can be most readily and quickly obtained, and which is prompt and energetic, but safe in its action. For this purpose there is, perhaps, nothing better than a large teaspoonful of ground mustard in a tumblerful of warm water, and it has the advantage of being almost always at hand. If the dry mustard is not to be had, use mixed mustard from the mustard pot. Its operations may generally be facilitated by the addition of a like quantity of common table salt. If the mustard is not at hand, give two or three teaspoonfuls of powdered alum in syrup or molasses, and give freely of warm water to drink; or give ten to twenty grains of sulphate of zinc (white vitriol), or twenty to thirty grains of ipecac, with one or two grains of tartar emetic, in a large cup of warm water, and repeat every ten minutes until three or four doses are given, unless free vomiting is sooner produced. After vomiting has taken place, large draughts of warm water should be given the patient, so that the vomiting will continue until the poisonous substances have been thoroughly evacuated, and then suitable antidotes should be given. If vomiting cannot be produced, the stomach-pump should be used. When it is known what particular kind of poison has been swallowed, then the proper antidote for that poison should be given, but when this cannot be ascertained, as is often the case, give freely of equal parts of calcined magnesia, pulverized charcoal, and sesquioxide of iron, in sufficient quantity of water. This is a very harmless mixture, and is likely to be of great benefit, as the ingredients, though very simple, are antidotes for the most common and active poisons. In case this mixture cannot be obtained, the stomach should be soothed and protected by the free administration of demulcent, mucilaginous, or oleaginous drinks, such as the whites of eggs, milk, mucilage of gum-arabic, or slippery elm bark, flaxseed tea, starch, wheat, flour, or arrowroot mixed in water, linseed or olive oil, or melted butter or lard. Subsequently the bowels should be moved by some gentle laxative, as a tablespoonful or two of castor oil, or a teaspoonful of calcined magnesia: and pain or other evidence of inflammation must be relieved by the administration of a few drops of laudanum, and the repeated application of hot poultices, fomentations, and mustard plasters. The following are the names of the articles that may give rise to poisoning most commonly used, and their antidotes:—

Mineral Acids—Sulphuric Acid (Oil of Vitriol), Nitric Acid (Aqua Fortis), Muriatic Acid (Spirits of Salts).—*Symptoms:* Acid, burning taste in the mouth, acute pain in the throat, stomach, and bowels; frequent vomiting generally bloody, mouth and lips excoriated, shrivelled, white or yellow; hiccough, copious stools, more or less bloody, with great tenderness in the abdomen; difficult breathing, irregular pulse, excessive thirst, while drink increases the pain and rarely remains in the stomach; frequent but vain efforts to urinate; cold sweats, altered countenance; convulsions generally preceding death; nitric acid causes yellow stains; sulphuric acid, black ones. *Treatment:* Mix calcined magnesia in milk or water to the consistence of cream, and give freely to drink a glassful every couple of minutes, if it can be swallowed. Common soap (hard or soft), chalk, whiting, or even mortar from the wall mixed in water, may be given, until magnesia can be obtained. Promote vomiting by tickling the throat, if necessary, and when the poison is got rid of, flaxseed or elm tea, gruel, or other mild drinks. The inflammation which always follows wants good treatment to save the patient's life.

Vegetable Acids—Acetic, Citric, Oxalic, Tartaric.—*Symptoms:* Intense burning pain of mouth, throat, and stomach; vomiting blood which is highly acid, violent purging, collapse, stupor, death.

Oxalic Acid is frequently taken in mistake for Epsom salts, to which in shops it often bears a strong resemblance. *Treatment:* Give chalk or magnesia in a large quantity of water, or large draughts of lime water. If these are not at hand, scrape the wall or ceiling, and give the scrapings, mixed with water.

Prussic or Hydrocyanic Acid—Laurel Water, Cyanide of Potassium, Bitter Almond Oil, etc.—

Symptoms: In large doses almost invariably instantaneously fatal; when not immediately fatal, sudden loss of sense and control of the voluntary muscles; the odour of the poison generally susceptible on the breath. *Treatment:* Chlorine, in the form of chlorine water, in doses of from one to four fluid drachms, diluted. Weak solution of chloride lime of soda; water of ammonia (spirits of hartshorn) largely diluted may be given, and the vapour of it cautiously inhaled. Cold affusion, and chloroform in half to teaspoonful doses in glycerine or mucilage, repeated every few minutes, until the symptoms are ameliorated. Artificial respiration.

ACONITE — MONKSHOOD, WOLFSBANE. — *Symptoms:* Numbness and tingling in the mouth and throat, and afterwards in other portions of the body, with sore throat, pain over the stomach, and vomiting; dimness of vision, dizziness, great prostration, loss of sensibility, and delirium. *Treatment:* An emetic and then brandy in tablespoonful doses, in ice water, every half hour; spirits of ammonia in half teaspoonful doses in like manner; the cold douche over the head and chest, warmth to the extremities, etc.

ALKALIES AND THEIR SALTS—CONCENTRATED LYE, WOODASH LYE, CAUSTIC POTASH, AMMONIA, HARTSHORN.—*Symptoms:* Caustic, acrid taste, excessive heat in the throat, stomach, and intestines; vomiting of bloody matter, cold sweats, hiccough, purging of bloody stools. *Treatment:* The common vegetable acids. Common vinegar being always at hand, is most frequently used. The fixed oils, as castor, flaxseed, almond, and olive oils, form soaps with the alkalies, and thus also destroy their caustic effect. They should be given in large quantity.

ALCOHOL, BRANDY, AND OTHER SPIRITUOUS LIQUORS.—*Symptoms:* Confusion of thought, inability to walk or stand, dizziness, stupor, highly flushed or pale face, noisy breathing. *Treatment:* After emptying the stomach, pour cold water on the head and back of the neck, rub or slap the wrists and palms, and the ankles and soles of the feet, and give strong, hot coffee, or aromatic spirits of hartshorn, in teaspoonful doses in water. The warmth of the body must be sustained.

ANTIMONY, AND ITS PREPARATIONS—TARTAR EMETIC, ANTIMONIAL WINE, KERME'S MINERAL.—*Symptoms:* Faintness and nausea, soon followed by painful and continued vomiting, severe diarrhœa, constriction and burning sensation in the throat, cramps, or spasmodic twitchings, with symptoms of nervous derangement, and great prostration of strength, often terminating in death. —*Treatment:* If vomiting has not been produced, it should be effected by tickling the fauces, and administering copious draughts of warm water. Astringent infusions, such as of gall, oak bark, Peruvian bark, act as antidotes, and should be given promptly. Powdered yellow bark may be used until the infusion is prepared, or very strong green tea should be given. To stop the vomiting, should it continue, blister over the stomach by applying a cloth wet with strong spirits of hartshorn, and then sprinkle on one-eighth to one-fourth of a grain of morphia.

ARSENIC AND ITS PREPARATIONS—RATSBANE, FOWLER'S SOLUTION, ETC.—*Symptoms:* Generally within an hour pain and heat are felt in the stomach, soon followed by vomiting, with a burning dryness of the throat and great thirst; the matters vomited are generally coloured, either green, yellow, or brownish, and sometimes bloody. Diarrhœa or dysentery ensues, while the pulse becomes small and rapid, yet irregular. Breathing much oppressed; difficulty in vomiting may occur, while cramps, convulsions, or even paralysis often precede death, which sometimes takes place within five or six hours after arsenic has been taken.—*Treatment:* Give a prompt emetic, and then hydrate of peroxide of iron (recently prepared) in tablespoonful doses every ten or fifteen minutes until the urgent symptoms are relieved. In the absence of this, or while it is being prepared, give large draughts of new milk and raw eggs, limewater and oil, melted butter, magnesia in a large quantity of water, or even if nothing else is at hand, flour and water, always, however, giving an emetic the first thing, or causing vomiting by tickling the throat with a feather, etc. The inflammation of the stomach which follows must be treated by blisters, hot fomentations, mucilaginous drinks, etc., etc.

BELLADONNA, OR DEADLY NIGHT-SHADE.—*Symptoms:* Dryness of the mouth and throat, great thirst, difficulty of swallowing, nausea, dimness, confusion or loss of vision, great enlargement of the pupils, dizziness, delirium and coma.—*Treatment:* There is no known antidote. Give a prompt emetic, and then reliance must be placed on continual stimulation with brandy, whisky, etc., and the necessary artificial respiration. Opium and its preparations, as morphia, laudanum, etc., are thought by some to counteract the effect of belladonna, and may be given in small and repeated doses, as also strong black coffee and green tea.

BLUE VITRIOL, OR BLUE STONE.—See Copperas.

CANTHARIDES (SPANISH OR BLISTERING FLY) AND MODERN POTATO BUG.—*Symptoms:* Sickening odour of the breath, sour taste, with burning heat in the throat, stomach, and bowels; frequent vomiting, often bloody; copious bloody stools, great pain in the stomach, with burning sensation in the bladder and difficulty to urinate, followed with terrible convulsions, delirium and death.—*Treatment:* Excite vomiting by drinking plentifully of sweet oil or other wholesome oils, sugar and water, milk, or slippery elm tea; give injections of castor oil and starch, or warm milk. The inflammatory symptoms which generally follow must be treated by a medical man. Camphorated oil or camphorated spirits should be rubbed over the bowels, stomach and thighs.

CAUSTIC POTASH.—See Alkalies.

COBALT, OR FLY-POWDER.—*Symptoms:* Heat and pain in the throat and stomach, violent retching and vomiting, cold and clammy skin, small and feeble pulse, hurried and difficult breathing, diarrhœa, etc.—*Treatment:* An emetic followed by the free administration of milk, eggs, wheat flour and water, and mucilaginous drinks.

COPPER—BLUE VITRIOL, VERDIGRIS ON PICKLES OR FOOD COOKED IN FOUL COPPER VESSELS.—*Symptoms:* General inflammation of the alimentary canal, suppression of urine; hiccough, a disagreeable metallic taste, vomiting, violent colic, excessive thirst, sense of tightness of the throat, anxiety; faintness, giddiness, and cramps and convulsions generally precede death.—*Treatment:* Large doses of simple syrup as warm as can be swallowed, until the stomach rejects the amount it contains. The whites of eggs and large quantities of milk. Hydrated peroxide of iron.

COPPERAS.—See Iron.

CREOSOTE—CARBOLIC ACID.—*Symptoms:* Burning pain, acrid, pungent taste, thirst, vomiting, purging, etc. —*Treatment:* An emetic, and the free administration of albumen, as the whites of eggs, or in the absence of these, milk, or flour and water.

CORROSIVE SUBLIMATE.—See Mercury.

DEADLY NIGHT-SHADE.—See Belladonna.

FOX-GLOVE, OR DIGITALIS.—*Symptoms:* Loss of strength, feeble, fluttering pulse, faintness, nausea, and vomiting and stupor; cold perspiration, dilated pupils, sighing, irregular breathing, and sometimes convulsions. —*Treatment:* After vomiting, give brandy and ammonia in frequently repeated doses, apply warmth to the extremities, and if necessary resort to artificial respiration.

GASES—CARBONIC ACID, CHLORINE, CYANOGEN, HYDROSULPHURIC ACID, ETC.—*Symptoms:* Great drowsiness, difficult respiration, features swollen, face blue as in strangulation.—*Treatment:* Artificial respiration, cold douche, frictions with stimulating substances to the surface of the body. Inhalation of steam containing preparations of ammonia. Cupping from nape of neck. Internal use of chloroform.

GREEN VITRIOL.—See Iron.

HELLEBORE, OR INDIAN POKE.—*Symptoms:* Violent vomiting and purging, bloody stools, great anxiety, tremors, vertigo, fainting, sinking of the pulse, cold sweats and convulsions.—*Treatment:* Excite speedy vomiting by large draughts of warm water, molasses and water, tickling the throat with the finger or a feather, and emetics; give oily and mucilaginous drinks, oily purgatives, and clysters, acids, strong coffee, camphor and opium.

HEMLOCK (CONIUM).—*Symptoms:* Dryness of the throat, tremors, dizziness, difficulty of swallowing, prostration and faintness, limbs powerless or paralysed, pupils dilated, pulse rapid and feeble; insensibility and convulsions sometimes precede death.—*Treatment:* Empty the stomach and give brandy in tablespoonful doses, with half-teaspoonful of spirits of ammonia, frequently repeated, and if much pain and vomiting, give bromide of ammonium in five-grain doses every half-hour. Artificial respiration may be required.

HENBANE, OR HYOSCYAMUS.—*Symptoms:* Muscular twitching, inability to articulate plainly, dimness of vision and stupor; later, vomiting and purging, small, intermitting pulse, convulsive movement of the extremities and coma.—*Treatment:* Similar to Opium Poisoning, which see.

IODINE.—*Symptoms:* Burning pain in throat, lacerating pain in the stomach, fruitless effort to vomit, excessive tenderness of the epigastrium.—*Treatment:* Free emesis, prompt administration of starch, wheat flour, or arrowroot, beat up in water.

LEAD—ACETATE OF LEAD, SUGAR OF LEAD, DRY WHITE LEAD, RED LEAD, LITHARGE OR PICKLES, WINE, OR VINEGAR, SWEETENED BY LEAD.—*Symptoms:* When taken in large doses, a sweet but astringent metallic taste exists, with constriction in the throat, pain in the region of the stomach, painful, obstinate, and frequently bloody vomitings, hiccough, convulsions or spasms, and death. When taken in small but long-continued doses, it produces colic, called painter's colic; great pain, obstinate constipation, and in extreme cases paralytic symptoms, especially wrist-drop, with a blue line along the edge of the gums.—*Treatment:* To counteract the poison, give alum in water, one and a half ounce to a quart; or, better still, Epsom salts or Glauber salts, an ounce of either in a quart of water; or dilute sulphuric acid, a teaspoonful to a quart of water. If a large quantity of sugar of lead has been recently taken, empty the stomach by an emetic of sulphate of zinc (one drachm in a quart of water), giving one-fourth to commence, and repeating smaller doses until free vomiting is produced; castor oil should be given to clear the bowels, and injections of oil and starch freely administered. If the body is cold, use the warm bath.

MEADOW SAFFRON.—See Belladonna.

LAUDANUM.—See Opium.

LUNAR CAUSTIC.—See Silver.

LOBELIA—INDIAN POKE.—*Symptoms:* Excessive vomiting and purging, pains in the bowels, contraction of the pupils, delirium, coma, and convulsions. *Treatment:* Mustard over the stomach, and brandy and ammonia.

MERCURY—CORROSIVE SUBLIMATE (bug poisons frequently contain this poison), RED PRECIPITATE, CHINESE OR ENGLISH VERMILION.—*Symptoms:* Acrid, metallic taste in the mouth, immediate constriction and burning in the throat, with anxiety and tearing pains in both stomach and bowels, sickness, and vomiting of various coloured fluids, and sometimes bloody and profuse diarrhœa, with difficulty and pain in urinating; pulse quick, small and hard; faint sensations, great debility, difficult breathing, cramps, cold sweats, syncope and convulsions. *Treatment:* If vomiting does not already exist, emetics must be given immediately—albumen of eggs in continuous large doses, and infusion of catechu afterwards, sweet milk, mixtures of flour and water in successive cupfuls, and to check excessive salivation put a half-ounce of chlorate of potash in a tumbler of water, and use freely as a gargle, and swallow a tablespoonful every hour or two.

MONKSHOOD.—See Arnica.

MORPHINE.—See Opium.

NITRATE OF SILVER (LUNAR CAUSTIC).—*Symptoms:* Intense pain and vomiting and purging of blood; mucus and shreds of mucous membranes; and if these stand they become dark. *Treatment:* Give freely of a solution of common salt in water, which decomposes the poison, and afterwards flax-seed or elm-bark tea, and after a while a dose of castor oil.

NUX VOMICA.—See Strychnine.

OPIUM AND ALL ITS PREPARATIONS—MORPHINE, LAUDANUM, PAREGORIC, ETC.—*Symptoms:* Giddiness, drowsiness, increasing to stupor, and insensibility; pulse usually, at first, quick and irregular, and breathing hurried, and afterwards pulse slow and feeble, and respiration slow and noisy; the pupils are contracted and the eyes and face congested, and later, as death approaches, the extremities become cold, the surface is covered with cold, clammy perspiration, and the sphincters relax. The effects of opium and its preparations, in poisonous doses, appear in from a half to two hours from its administration. *Treatment:* Empty the stomach immediately with an emetic or with the stomach pump. Then give very strong coffee without milk; put mustard plasters on the wrist and ankles; use the cold douche to the head and chest, and if the patient is cold and sinking give brandy, or whisky and ammonia. Belladonna is thought by many to counteract the poisonous effects of opium, and may be given in doses of half to a teaspoonful of the tincture, or two grains of the extract, every twenty minutes, until some effect is observed in causing the pupils to expand. Use warmth and friction, and if possible prevent sleep for some hours, for which purpose the patient should be walked about between two persons, and if necessary a bunch of switches may be freely used. Finally, as a last resort, use artificial respiration, and a persistence in it will sometimes be rewarded with success in apparently hopeless cases. Galvanism should also be tried.

Oxalic Acid.—See Acids.

Phosphorus—Found in Lucifer Matches and some Rat Poisons.—*Symptoms:* Symptoms of irritant poisoning; pain in the stomach and bowels; vomiting; diarrhœa; tenderness and tension of the abdomen. *Treatment:* An emetic is to be promptly given; copious draughts containing magnesia in suspension; mucilaginous drinks. General treatment for inflammatory symptoms.

Poisonous Fish.—*Symptoms:* In an hour or two—often in much shorter time—after the fish has been eaten, a weight at the stomach comes on, with slight vertigo and headache; sense of heat about the head and eyes; considerable thirst, and often an eruption of the skin. *Treatment:* After full vomiting, an active purgative should be given to remove any of the noxious matter from the intestines. Vinegar and water may be drunk after the above remedies have operated, and the body may be sponged with the same. Water made very sweet with sugar, with aromatic spirits of ammonia added, may be drunk freely as a corrective. A solution of chlorate of potash, or of alkali, the latter weak, may be given to obviate the effect of the poison. If spasms ensue after evacuation, laudanum in considerable doses is necessary. If inflammation should occur, combat in the usual way.

Poisonous Mushrooms.—*Symptoms:* Nausea, heat and pains in the stomach and bowels; vomiting and purging, thirst, convulsions and faintings, pulse small and frequent, dilated pupil and stupor, cold sweats and death. *Treatment:* The stomach and bowels are to be cleared by an emetic of ground mustard or sulphate of zinc, followed by frequent doses of Glauber or Epsom salts, and large stimulating clysters. After the poison is evacuated, either may be given with small quantities of brandy and water. But if inflammatory symptoms manifest themselves, such stimuli should be avoided, and these symptoms appropriately treated.

Potash.—See Alkali.

Prussic Acid, Hydrocyanic.—See Acids.

Poison Ivy.—*Symptoms:* Contact with, and with many persons the near approach to the vine, gives rise to violent erysipelatous inflammation, especially of the face and hands, attended with itching, redness, burning and swelling, with watery blisters. *Treatment:* Give saline laxatives, and apply weak lead and laudanum, or lime-water and sweet oil, or bathe the parts freely with spirits of nitre. Anointing with oil will prevent poisoning from it.

Saltpetre, Nitrate of Potash.—*Symptoms:* Only poisonous in large quantities, and then causes nausea, painful vomiting, purging, convulsions, faintness, feeble pulse, cold feet and hands, with tearing pains in stomach and bowels. *Treatment:* Treat just as directed for arsenic, for there is no antidote known, and emptying the stomach and bowels with mild drinks must be relied on.

Savine.—*Symptoms:* Sharp pains in the bowels, hot skin, rapid pulse, violent vomiting and sometimes purging, with great prostration. *Treatment:* Mustard and hot fomentations over the stomach and bowels, and ice only allowed in the stomach until the inflammation ceases. If prostration comes on, food and stimulants must be given by injection.

Stramonium, Thorn-apple or Jamestown Weed.—*Symptoms:* Vertigo, headache, perversion of vision, slight delirium, sense of suffocation, disposition to sleep, bowels relaxed and all secretions augmented. *Treatment:* Same as Belladonna.

Strychnine and Nux Vomica.—*Symptoms:* Muscular twitching, constriction of the throat, difficult breathing and oppression of the chest; violent muscular spasms then occur, continuous in character like lock-jaw, with the body bent backwards, sometimes like a bow. *Treatment:* Give, if obtainable, one ounce or more of bone charcoal mixed with water, and follow with an active emetic; then give chloroform in teaspoonful doses, in flour and water or glycerine, every few minutes while the spasms last, and afterwards brandy and stimulants, and warmth of the extremities if necessary. Recoveries have followed the free and prompt administration of oils or melted butter or lard. In all cases empty the stomach if possible.

Sulphate of Zinc, White Vitriol.—See Zinc.

Tin—Chloride of Tin, Solution of Tin (Used by Dyers), Oxide of Tin or Putty Powder.—*Symptoms:* Vomiting, pains in the stomach, anxiety, restlessness, frequent pulse, delirium, etc. *Treatment:* Empty the stomach, and give whites of eggs in water, milk in large quantities, or flour beaten up in water, with magnesia or chalk.

Tartar Emetic.—See Antimony.

Tobacco. — *Symptoms:* Vertigo, stupor, fainting, nausea, vomiting, sudden nervous debility, cold sweat, tremors, and at times fatal prostration. *Treatment:* After the stomach is empty apply mustard to the abdomen and to the extremities, and give strong coffee, with brandy and other stimulants, with warmth to the extremities.

Zinc—Oxide of Zinc, Sulphate of Zinc, White Vitriol, Acetate of Zinc.—*Symptoms:* Violent vomiting, astringent taste, burning pain in the stomach, pale countenance, cold extremities, dull eyes, fluttering pulse. Death seldom ensues, in consequence of the emetic effect. *Treatment:* The vomiting may be relieved by copious draughts of warm water. Carbonate of soda, administered in solution, will decompose the sulphate of zinc. Milk and albumen will also act as antidotes. General principles to be observed in the subsequent treatment.

Woorara.—*Symptoms:* When taken into the stomach it is inert; when absorbed through a wound it causes sudden stupor and insensibility, frothing at the mouth and speedy death. *Treatment:* Suck the wound immediately, or cut it out and tie a cord around the limb between the wound and the heart. Apply iodine, or iodide of potassium, and give it internally, and try artificial respiration.

Scalds.—See Burns and Scalds.

Sprains.—The portions most frequently implicated are the wrist and ankle; no matter which portion it may be, however, rest and quietness is a very important part of the treatment, and, when possible, in an elevated position. If the wrist is sprained it should be carried in a sling; if the ankle, it should be supported on a couch or stool. Cold lotions (see Bruises) should be freely applied, and irrigation by pouring water from a pitcher or teakettle resorted to several times a day to prevent inflammation. Later, frictions with opodeldoc, or with some stimulating liniment, and supporting the parts by pressure made with a flannel roller, or laced stocking when the ankle is involved, will be useful to restore tone; or strips of adhesive plaster properly applied will be useful for the same purpose. Recovery from severe sprains is always tedious. It is an old saying that "a bad sprain is worse than a broken bone."

Stings of Bees and Wasps.—See Bites and Stings.

Suffocation from Noxious Gases, Foul Air, Fire Damp, Etc.—Remove to fresh air and dash cold water over the head, neck and chest; carefully apply hartshorn, or smelling salts, to the nostrils, and when the breathing is feeble or has ceased, resort immediately to artificial respiration (see Asphyxia and Drowning). Keep up the warmth of the body, and as soon as the patient can swallow give stimulants in small quantities.

Sunstroke.—This is caused by long exposure in great heat, especially when accompanied with great fatigue and exhaustion. Though generally happening from exposure to the sun's rays, yet precisely similar effects may be and are produced from any undue exposure to great and exhaustive heat, such as workmen are exposed to in foundries, gas factories, bakeries, and other similar employments. Its first symptom is pain in the head and dizziness, quickly followed by loss of consciousness, and resulting in complete prostration; sometimes, however, the attack is sudden, as in apoplexy. The head is generally burning hot, the face dark and swollen, the breathing laboured and snoring, and the feet and hands cold. Remove the patient at once to a cool and shady place, and lay him down with his head a little raised; apply ice or iced water to the head and face; loosen all clothes around the neck or waist; bathe the chest with cold water, apply mustard plasters, or cloths wetted with turpentine, to the calves and soles of the feet, and as soon as the patient can swallow, give weak brandy or whisky and water.

HOUSEHOLD RECIPES.

MISCELLANEOUS.

Axle Grease.—1. Water, 1 gallon; soda, $\frac{1}{3}$ pound; palm oil, 10 pounds. Mix by heat, and stir till nearly cold. 2. Water, rape oil, of each 1 gallon; soda, $\frac{1}{3}$ pound; palm oil, $\frac{1}{4}$ pound. 3. Water, 1 gallon; tallow, 3 pounds; palm oil, 6 pounds; soda, $\frac{1}{2}$ pound. Heat to 210 deg. Fahrenheit, and stir until cool. 4. Tallow, 8 pounds; palm oil, 10 pounds; plumbago, 1 pound. Makes a good lubricator for waggon axles.

How to Shell Beans Easily.—Pour upon the pods a quantity of scalding water, and the beans will slip very easily from the pod. By pouring scalding water on apples the skin may be easily slipped off, and much labour saved.

How to Clean Bed-Ticks.—Apply Poland starch, by rubbing it on thick with a cloth. Place it in the sun. When dry, rub it if necessary. The soiled part will be clean as new.

How to Wash Carpets.—Shake and beat it well; lay it upon the floor and tack it firmly; then with a clean flannel wash it over with a quart of bullock's gall mixed with three quarts of soft, cold water, and rub it off with a clean flannel or house-cloth. Any particularly dirty spot should be rubbed with pure gall.

How to Clean Carpets.—Before proceeding to sweep a carpet a few handfuls of waste tea-leaves should be sprinkled over it. A stiff hair broom or brush should be employed, unless the carpet is very dirty, when a whisk or carpet-broom should be used first, followed by another made of hair, to take off the loose dust. The frequent use of a stiff carpet broom soon wears off the beauty of the best carpet. An ordinary clothes brush is best adapted for superior carpets. When carpets are very dirty they should be cleaned by shaking and beating. Beat it well with a stick in the usual manner until all the dust is removed, then take out the stains, if any, with lemon or sorrel-juice. When thoroughly dry rub it all over with the crumb of a hot wheaten loaf, and if the weather is very fine, let hang out in the open air for a night or two. This treatment will revive the colours, and make the carpet appear equal to new.

How to Remove Spots on Carpets.—A few drops of carbonate of ammonia, and a small quantity of warm rain water, will prove a safe and easy antacid, etc., and will change, if carefully applied, discoloured spots upon carpets, and indeed, all spots, whether produced by acids or alkalies. If one has the misfortune to have a carpet injured by whitewash, this will immediately restore it.

How to Remove Ink Spots on Carpets.—As soon as the ink has been spilled, take up as much as you can with a sponge, and then pour on cold water repeatedly, still taking up the liquid; next rub the place with a little wet oxalic acid or salt of sorrel, and wash it off immediately with cold water, and then rub on some hartshorn.

Cleaning and Scouring of Cloth.—The common method of cleaning cloth is by beating and brushing, unless when very dirty, when it undergoes the operation of scouring. This is best done on the small scale, as for articles of wearing apparel, etc., by dissolving a little curd soap in water, and after mixing it with a little ox-gall, to touch over all the spots of grease, dirt, etc., with it, and to rub them well with a stiff brush, until they are removed, after which the article may be well rubbed all over with a brush or sponge dipped into some warm water, to which the previous mixture and a little more ox-gall has been added. When this has been properly done, it only remains to thoroughly rinse the article in clean water until the latter passes off uncoloured, when it must be hung up to dry. For dark, coloured cloths the common practice is to add some Fuller's earth to the mixture of soap and gall. When nearly dry the nap should be laid right and the article carefully pressed, after which a brush, moistened with a drop or two of olive oil, is passed several times over it, which will give it a superior finish. Cloth may also be cleaned in the dry way, as follows: First remove the spots, as above, and when the parts have dried, strew clean, damp sand over it, and beat it with a brush, after which brush the article with a hard brush, when the sand will readily come out, and bring the dirt with it. Black cloth which is very rusty should receive a coat of reviver after drying, and be hung up until the next day, when it may be pressed and finished off as before. Scarlet cloth requires considerable caution. After being thoroughly rinsed, it should be repeatedly passed through cold spring water, to which a tablespoonful or two of solution of tin has been added. If much faded, it should be dipped in a scarlet dye-bath. Buff cloth is generally cleansed by covering it with a paste made with pipe-clay and water, which, when dry, is rubbed and brushed off.

How to Revive the Colour of Black Cloth.—If a coat, clean it well, then boil from two to four ounces of logwood in your copper, or boiler, for half an hour; dip your coat in warm water, and squeeze it as dry as you can; then put it into the copper and boil it for half an hour. Take it out, and add a piece of green copperas, about the size of a horse-bean; boil it another half hour, then draw it, and hang it in the air for an hour or two; take it down, rinse it in two or three cold waters; dry it, and let it be well brushed with a soft brush, over which a drop or two of the oil of olives has been rubbed, then stroke your coat regularly over.

How to Restore Crape.—Skimmed milk and water, with a little bit of glue in it, made scalding hot, is excellent to restore rusty Italian crape. If clapped and pulled dry like muslin, it will look as good as new; or, brush the veil till all the dust is removed, then fold it lengthwise, and roll it smoothly and tightly on a roller. Steam it till it is thoroughly dampened, and dry on the roller.

How to Cleanse Feather Beds.—When feather beds become soiled and heavy they may be made clean and light by being treated in the following manner: Rub them over with a stiff brush, dipped in hot soap-suds. When clean lay them on a shed, or any other clean place where the rain will fall on them. When thoroughly soaked let them dry in a hot sun for six or seven successive days, shaking them up well and turning them over each day. They should be covered over with a thick cloth during the night; if exposed to the night air they will become damp and mildew. This way of washing the bed-ticking and feathers makes them very fresh and light, and is much easier than the old-fashioned way of emptying the beds and washing the feathers separately, while it answers quite as well. Care must be taken to dry the bed perfectly before sleeping on it. Hair mattresses that have become hard and dirty can be made nearly as good as new by ripping them, washing the ticking, and picking the hair free from bunches and keeping it in a dry, airy place several days. Whenever the ticking gets dry fill it lightly with the hair, and tack it together.

How to Cut Up and Cure Pork.—Have the hog laid on his back on a stout, clean bench; cut off the head close to the base. If the hog is large, there will come off a considerable collar, between head and shoulders, which, pickled or dried, is useful for cooking with vegetables. Separate the jowl from the face at the natural joint; open the skull lengthwise and take out the brains, esteemed a luxury. Then with a sharp knife remove the backbone the whole length, then the long strip of fat underlying it, leaving about one inch of fat covering the spinal column. The leaf lard, if not before taken out for the housewife's convenience, is removed, as is also the tenderloin—a fishy-shaped piece of flesh—often used for sausage, but which makes delicious steak. The middling or sides are now cut out, leaving the shoulders square-shaped and the hams pointed, or they may be rounded to your taste. The spare-ribs are usually wholly removed from the sides, with but little meat adhering. It is the sides of small, young hogs cured as hams that bear the name of breakfast bacon. The sausage meat comes chiefly in strips from the backbone, part of which may also be used as steak. The lean trimmings from about the joints are used for sausage, the fat scraps rendered up with the backbone lard. The thick part of the backbone that lies between the shoulders, called griskin or chine, is separated from the tapering, bony part, called backbone by way of distinction, and used as flesh. The chines are smoked with jowls, and used in late winter or spring. When your meat is to be pickled it should be dusted lightly with saltpetre, sprinkled with salt, and allowed to drain twenty-four hours; then plunge it into pickle, and keep under with a weight. It is good policy to pickle a portion of the sides. They, after soaking, are sweeter to cook with vegetables, and the grease fried from them is much more useful than that of smoked meat. If your meat is to be dry salted, allow one teaspoonful of pulverised saltpetre to one gallon of salt, and keep the mixture warm beside you. Put on a hog's ear as a mitten, and rub each piece of meat thoroughly. Then pack skin side down, ham upon ham, side upon side, strewing on salt abundantly. It is best to put large and small pieces in different boxes for the convenience of getting at them to hang up at the different times they will come into readiness. The weather has so much to do with the time that meat requires to take salt that no particular time can be specified for leaving it in. The best test is to try a medium-sized ham; if salt enough, all similar and smaller pieces are surely ready, and it is well to remember that the saltness increases in drying. Ribs and steaks should be kept in a cold, dark place, without salting, until ready for use. If you have many, or the weather is warm, they keep better in pickle than dry salt. Many persons turn and rub their meat frequently. We have never practised this, and have never lost any. When the meat is ready for smoking, dip the hocks of the joints in ground black pepper and dust the raw surface thickly with it. Sacks, after this treatment, may be used for double security, and I think bacon high and dry is sweeter than packed in any substance. For sugar-cured hams we append the best recipe we have ever used, though troublesome.

Recipe for Sugar-Curing Hams.—So soon as the meat comes from the butcher's hand rub it thoroughly with the salt. Repeat this four days, keeping the meat where it can drain. The fourth day rub it with saltpetre and a handful of common salt, allowing one pound of saltpetre to seventy pounds of meat. Now mix one pound of brown sugar and one of molasses, rub over the ham every day for a fortnight, and then smoke. Hams should be hung highest in meat-houses, because there they are less liable to the attacks of insects, for insects do not so much infest high places—unlike human pests.

Pickle.—Make eight gallons of brine strong enough to float an egg; add two pounds of brown sugar or a quart of molasses, and four ounces of saltpetre; boil and skim clean, and pour cold on your meat. Meat intended for smoking should remain in pickle for about four weeks. This pickle can be boiled over, and with a fresh cup of sugar and salt used all summer. Some persons use as much soda as saltpetre. It will correct acidity, but we think impairs the meat.

Washing Preparation.—Take ¼ lb. of soap, ¼ lb. of soda, and ¼ lb. of quicklime. Cut up the soap and dissolve it in 1 quart of boiling water; pour 1 quart of boiling water over the soda, and 3 quarts of boiling water upon the quicklime. The lime must be quick and fresh; if it is good it will bubble up on pouring the hot water upon it. Each must be prepared in separate vessels. The lime must settle so as to leave the water on the top perfectly clear; then strain it carefully (not disturbing the settlings) into the wash-boiler with the soda and soap; let it scald long enough to dissolve the soap, then add 6 gallons of soap water. The clothes must be put to soak over night, after rubbing soap upon the dirtiest parts of them. After having the above in readiness, wring out the clothes which have been put in soak, put them on to boil, and let each lot boil half an hour; the same water will answer for the whole washing. After boiling each lot half an hour drain them from the boiling water, put them in a tub and pour upon them two or three pailfuls of clear, hot water; after this they will want very little rubbing; then rinse through two waters, bluing the last. When dried they will be a beautiful white. After washing the cleanest part of the white clothes, take two pails of the suds in which they have been washed, put it over the fire and scald, and this will wash all the flannels and coloured clothes without any extra soap. The white flannels, after being well washed in the suds, will require to be scalded by turning on a teakettle of boiling water.

How to Destroy Household Pests.

How to Destroy Ants.—Ants that frequent houses or gardens may be destroyed by taking flower of brimstone, half a pound, and potash, four ounces; set them in an iron or earthen pan over the fire till dissolved and united; afterward beat them to a powder, and infuse a little of this powder in water; and wherever you sprinkle it, the ants will die or fly the place.

How to Destroy Black Ants.—A few leaves of green wormwood, scattered among the haunts of these troublesome insects, is said to be effectual in dislodging them.

How to Destroy Red Ants.—The best way to get rid of ants, is to set a quantity of cracked walnuts or shell-barks on plates, and put them in the closet or places where the ants congregate. They are very fond of these, and will collect on them in myriads. When they have collected on them, make a general *auto-da-fe*, by turning nuts and ants together into the fire, and then replenish the plates with fresh nuts. After they have become so thinned off as to cease collecting on plates, powder some camphor, and put in the holes and crevices, whereupon the remainder of them will speedily depart. It may help the process of getting them to assemble on shell-barks, to remove all edibles out of their way for the time.

How to Destroy Black Bees.—Place two or three shallow vessels—the larger kind of flower-pot saucers will do—half filled with water, on the floors where they assemble, with strips of cardboard running from the edge of the vessel to the floor, at a gentle inclination; these the unwelcome guests will eagerly ascend, and so find a watery grave.

How to Destroy Bed-Bugs.—1. When they have made a lodgment in the wall, fill all the apertures with a mixture of soft soap and Scotch snuff. Take the bedstead to pieces, and treat that in the same way. 2. A strong decoction of red pepper applied to bedsteads will either kill the bugs or drive them away. 3. Put the bedstead into a close room, and set fire to the following composition, placed in an iron pot upon the hearth, having previously closed up the chimney, then shut the door; let them remain a day:—Sulphur, nine parts; saltpetre, powdered, one part. Mix. Be sure to open the door of the room five or six hours before you venture to go into it a second time. 4. Rub the bedstead well with lamp-oil; this alone is good, but to make it more effectual, get six pennyworth of quicksilver and add to it. Put it into all the cracks around the bed, and they will soon disappear. The bedsteads should first be scalded and wiped dry, then put on with a feather. 5. Corrosive sublimate, one ounce; muriatic acid, two ounces; water, four ounces; dissolve, then add turpentine, one pint; decoction of tobacco, one pint. Mix. For the decoction of tobacco, boil one ounce of tobacco in a half pint of water. The mixture must be applied with a paint brush. This wash is deadly poison. 6. Rub the bedsteads in the joints with equal parts of spirits of turpentine and kerosene oil, and the cracks of the surbase in rooms where there are many. Filling up all the cracks with hard soap is an excellent remedy. March and April are the months when bedsteads should be examined to kill all the eggs. 7. Mix together two ounces spirits of turpentine, one ounce corrosive sublimate, and one pint alcohol. 8. Distilled vinegar, or diluted good vinegar, a pint; camphor, one-half ounce; dissolve. 9. White arsenic, two ounces; lard, thirteen ounces; corrosive sublimate, one-fourth ounce; venetian red, one-fourth ounce. (Deadly poison.) 10. Strong mercurial ointment, one ounce; soft soap, one ounce; oil of turpentine, a pint. 11. Gasoline and coal-oil are both excellent adjuncts, with cleanliness, in ridding a bed or house of these pests.

How to Destroy Caterpillars.—Boil together a quantity of rue, wormwood, and any cheap tobacco (equal parts) in common water. The liquid should be very strong. Sprinkle it on the leaves and young branches every morning and evening during the time the fruit is ripening.

How to Destroy Cockroaches and Beetles.—1. Strew the roots of black hellebore, at night, in the places infested by these vermin, and they will be found in the morning dead or dying. Black hellebore grows in marshy grounds, and may be had at the herb shops. 2. Put about a quart of water, sweetened with molasses, in a tin wash basin, or smooth glazed china bowl. Set it at evening in a place frequented by the beetles. Around the basin put an old piece of carpet, that the beetles can have easy access to the top. They will go down in the water, and stay till you come. 3. Take pulverised borax, four parts; flour, one part; mix intimately, and distribute the mixture in cupboards which are frequented by the roaches, or blow it, by means of a bellows, into the holes or cracks that are infested by them. 4. By scattering a handful of fresh cucumber parings about the house. 5. Take carbonic acid and powdered camphor in equal parts; put them in a bottle; they will become fluid. With a painter's brush, of the size called a sash-tool, put the mixture on the cracks or places where the roaches hide; they will come out at once. Then kill. 6. Mix up a quantity of fresh burned plaster of Paris (gypsum, such as is used for making moulds and ornaments), with wheat flour and a little sugar, and distribute on shallow plates and box boards, and place in the corners of the kitchen and pantry, where they frequent. In the darkness they will feast themselves on it. Whether it interferes with their digestion or not, is difficult to ascertain, but after three or four nights' renewal of the preparation, no cockroaches will be found on the premises.

How to Destroy Crickets.—Sprinkle a little quick-lime near to the cracks through which they enter the room. The lime may be laid down overnight, and swept away in the morning. In a few days they will most likely all be destroyed. But care must be taken that the children do not meddle with the lime, as a very small portion of it, getting into the eye, would prove exceedingly hurtful. In case of such an accident, the best thing to do would be to wash the eye with vinegar and water.

How to get Rid of Fleas.—Much of the largest number of fleas are brought into our family circles by pet dogs and cats. The oil of pennyroyal will drive these insects off; but a cheaper method, where the herb flourishes, is to throw your cats and dogs into a decoction of it once a week. When the herb cannot be got, the oil can be procured. In this case, saturate strings with it, and tie them around the necks of the dogs and cats. These applications should be repeated every twelve or fifteen days. Mint, freshly cut, and hung round a bedstead, or on the furniture, will prevent annoyance from bed insects; a few drops of essential oil of lavender will be more efficacious.

How to Destroy Flies.—1. Take an infusion of quassia, one pint; brown sugar, four ounces; ground pepper, two ounces. To be well mixed together, and put in small shallow dishes where required. 2. Black pepper (powdered), one drachm; brown sugar, one drachm; milk or cream, two drachms. Mix, and place it on a plate or saucer where the flies are most troublesome. 3. Pour a little simple oxymel (an article to be obtained at the druggist's) into a common tumbler glass, and place in the glass a piece of cap paper, made into the shape of the upper part of a funnel, with a hole at the bottom to admit the flies. Attracted by the smell, they readily enter the trap in swarms, and by the thousands soon collected, prove that they have not the wit or the disposition to return. 4. Take some jars, mugs, or tumblers, fill them half full with soapy water; cover them as jam-pots are covered, with a piece of paper, either tied down or tucked under the rim. Let this paper be rubbed inside with wet sugar, molasses, honey, or jam, or any thing sweet; cut a small hole in the centre, large enough for a fly to enter. The flies settle on the top, attracted by the smell of the bait; they then crawl through the hole, to feed upon the sweets beneath. Meanwhile, the warmth of the weather causes the soapy water to ferment, and produces a gas which overpowers the flies, and they drop down into the vessel. Thousands may be destroyed in this way, and the traps last a long time.

Fly Paper.—Melt resin, and add thereto, while soft, sufficient sweet oil, lard, or lamp oil to make it, when cold, about the consistency of honey. Spread on writing paper, and place in a convenient spot. It will soon be filled with ants, flies, and other vermin.

How to Expel Insects.—All insects dread pennyroyal; the smell of it destroys some, and drives others away. At the time that fresh pennyroyal cannot be gathered, get oil of pennyroyal; pour some into a saucer, and steep in it small pieces of wadding or raw cotton, and place them in corners, closet-shelves, bureau drawers, boxes, etc., and the cockroaches, ants, or other insects will soon disappear. It is also well to place some between the mattresses, and around the bed. It is also a splendid thing for brushing off that terrible little insect, the seed tick.

How to Destroy Mice.—1. Use tartar emetic mingled with some favourite food. The mice will leave the premises. 2. Take one part calomel, five parts of wheat flour, one part sugar, and one-tenth of a part of ultramarine. Mix together in a fine powder, and place it in a dish. This is a most efficient poison for mice. 3. Any one desirous of keeping seeds from the depredations of mice, can do so by mixing pieces of camphor gum in with the seeds. Camphor placed in drawers or trunks will prevent mice from doing them injury. The little animal objects to the odour, and keeps a good distance from it. He will seek food elsewhere. 4. Gather all kinds of mint and scatter about your shelves, and they will forsake the premises.

How to Drive Away Mosquitoes.—1. A camphor bag hung up in an open casement will prove an effectual barrier to their entrance. Camphorated spirits applied as perfume to the face and hands, will prove an effectual preventive; but when bitten by them, aromatic vinegar is the best antidote. 2. A small amount of oil of pennyroyal sprinkled around the room will drive away the mosquitoes. This is an excellent recipe. 3. Take of gum camphor a piece about half the size of an egg, and evaporate it by placing it in a tin vessel, and holding it over a lamp or candle, taking care that it does not ignite. The smoke will soon fill the room, and expel the mosquitoes.

How to Preserve Clothing from Moths.—1. Procure shavings of cedar wood, and enclose in muslin bags, which should be distributed freely among clothes. 2. Procure shavings of camphor wood, and enclose in bags. 3. Sprinkle pimento (allspice) berries among the clothes. 4. Sprinkle the clothes with the seeds of the musk plant. 5. An ounce of gum camphor, and one of the powdered shell of red pepper are macerated in eight ounces of strong alcohol for several days, then strained. With this tincture the furs or clothes are sprinkled over, and rolled up in sheets. 6. Carefully shake and brush woollens early in the spring, so as to be certain that no eggs are in them; then sew them up in cotton or linen wrappers, putting a piece of camphor gum, tied up in a bit of muslin, into each bundle, or into the chests and closets where the articles are to lie. No moth will approach while the smell of the camphor continues. When the gum is evaporated, it must be renewed. Enclose them in a moth-proof box with camphor, no matter whether made of white paper or white pine, before any eggs are laid on them by early spring moths. The notion of having a trunk made of some particular kind of wood for this purpose, is nonsense. Furs or woollens, put away in spring time, before moth eggs are laid, into boxes, trunks, drawers, or closets even, where moths cannot enter, will be safe from the ravages of moth-worms, provided none were in them that were laid late in the autumn, for they are not of spontaneous production.

How to Kill Moths in Carpets.—Wring a coarse crash towel out of clear water, spread it smoothly on the carpet, iron it dry with a good hot iron, repeating the operation on all parts of the carpet suspected of being infected with moths. No need to press hard, and neither the pile nor colour of the carpet will be injured, and the moths will be destroyed by the heat and steam.

How to Destroy Rats.—1. When a house is infested with rats, which refuse to be caught by cheese and other baits, a few drops of the highly-scented oil of rhodium poured on the bottom of the cage will be an attraction which they cannot refuse. 2. Place on the floor near where their holes are supposed to be, a thin layer of moist caustic potash. When the rats travel on this, it will cause their feet to become sore, which they lick, and their tongues become likewise sore. The consequence is, that they shun this locality, and seem to inform all the neighbouring rats about it, and the result is, that they soon abandon a house that has such mean floors. 3. Cut some corks as thin as wafers, and fry, roast, or stew them in grease, and place the same in their track; or a dried sponge fried or dipped in molasses or honey, with a small quantity of birdlime or oil of rhodium, will fasten to their fur, and cause them to depart. 4. If a live rat can be caught, and smeared over with tar or train oil, and afterwards allowed to escape in the holes of other rats, he will cause all soon to take their departure. 5. If a live rat be caught, and a small bell be fastened around his neck, and he allowed to escape, all of his brother rats, as well as himself, will very soon go to some other neighbour's house. 6. Take a pan, about twelve inches deep, and half fill it with water; then sprinkle some bran on the water, and set the pan in a place where the rats most frequent. In the morning you will find several rats in the pan. 7. Flour, three parts; sugar, one-half part; sulphur, two parts; and phosphorus, two parts. Smear on meat, and place near where the rats are most troublesome. 8. Squills are an excellent poison for rats. The powder should be mixed with some fatty substance, and spread upon slices of bread. The pulp of onions is also very good. Rats are very fond of either. 9. Take two ounces of carbonate of barytes, and mix with one pound of suet or tallow, place a portion of this within their holes and about their haunts. It is greedily eaten, produces great thirst, and death ensues after drinking. This is a very effectual poison, because it is both tasteless and odourless. 10. Take one ounce of finely powdered arsenic, one ounce of lard; mix these into a paste with meal, put it about the haunts of rats. They will eat of it greedily. 11. Make a paste of one ounce of flour, one-half gill of water, one drachm of phosphorus, and one ounce of flour. Or, one ounce of flour, two ounces of powdered cheese crumbs, and one-half drachm of phosphorus; add to each of these mixtures a few drops of the oil of rhodium, and spread this on thin pieces of bread like butter; the rats will eat of this greedily, and it is a sure poison. 12. Mix some ground plaster of Paris with some sugar and Indian meal. Set it about on plates, and leave beside each plate a saucer of water. When the rats have eaten the mixture they will drink the water and die. To attract them toward it, you may sprinkle on the edges of the plates a little of the oil of rhodium. Another method of getting rid of rats is, to strew pounded potash on their holes. The potash gets into their coats and irritates the skin, and the rats desert the place. 13. The Dutch method: this is said to be used successfully in Holland; we have, however, never tried it. A number of rats are left together to themselves in a very large trap or cage, with no food whatever; their craving hunger will, at last, cause them to fight and the weakest will be eaten by the others; after a short time the fight is renewed, and the next weakest is the victim, and so it goes on till one strong rat is left. When this one has eaten the last remains of any of the others, it is set loose; the animal has now acquired such a taste for rat-flesh that he is the terror of ratdom, going round seeking what rat he may devour. In an incredibly short time the premises are abandoned by all other rats, which will not come back before the cannibal rat has left or has died. 14. Catch a rat and smear him over with a mixture of phosphorus and lard, and then let him loose. The house will soon be emptied of these pests.

Vermin in Water.—Go to the river or pond, and with a small net (a piece of old mosquito bar will do) collect a dozen or more of the small fishes known as minnows, and put them in your cistern, and in a short time you will have clear water, the wiggle-tails and reddish-coloured bugs or lice being gobbled up by the fishes.

HOW TO CURE, STORE, AND PRESERVE MEATS AND VEGETABLES.

How to Keep Apples.—The following is a good plan: The apples should be placed in glazed earthen vessels, each containing about a gallon, and surrounding the fruit with paper. The vessels being perfect cylinders, about a foot each in height, stand very conveniently upon each other, and thus present the means of preserving a large quantity of fruit in a very small room. If the space between the top of one vessel and the base of another be filled with cement, composed of two parts of the curd of skimmed milk and one of lime, by which the air will be excluded, the winter kind of apples will be preserved with little change in their appearance from October to March. A dry and cold place in which there is little change of temperature is the best.

How to Dry Apples.—The most general method adopted in drying apples is, after they are pared, to cut them in slices, and spread them on cloths, tables or boards, and then dry them outdoors. In clear and dry weather this is, perhaps, the most expeditious and best way; but in cloudy and stormy weather this way is attended with much inconvenience, and sometimes loss, in consequence of the apples rotting before they dry. To some extent they may be dried in this way in the house, though this is attended with much inconvenience. The best method that we have ever used to dry apples is to use frames. These combine the most advantages with the least inconvenience of any way, and can be used with equal advantage either in drying in the house or out in the sun. In pleasant weather, the frames can be set outdoors against the side of the building, or any other support, and at night, or in cloudy and stormy days, they can be brought into the house, and set against the side of the room near the stove or fireplace. Frames are made in the following manner: Two strips of board, 7 feet long, 2 to 2½ inches wide—two strips 3 feet long, 1½ inch wide, the whole ¾ inch thick—nail the short strips across the ends of the long ones, and it makes a frame 3 by 7 feet, which is a convenient size for all purposes. On one of the long strips nails are driven 3 inches apart, extending from the top to the bottom. After the apples are pared they are quartered and cored, and with a needle and twine, or stout thread, strung into lengths long enough to reach twice across the frame; the ends of the twine are then tied together, and the strings hung on the nails across the frame. The apples will soon dry so that the strings can be doubled on the nails, and fresh ones put on or the whole of them removed, and others put in their place. As fast as the apples become sufficiently dry, they can be taken from the strings, and the same strings used to dry more on. If large apples are used to dry, they can be cut in smaller pieces. Pears and quinces, and other fruits that can be strung, may be dried in this way.

How to Pack Apples in Barrels.—When the farmers find out that the manner of packing apples in barrels greatly influences the price of the same, they will take more care than they usually do. A neatly packed barrel will bring from four to eight shillings more than one in which the apples are thrown in without any effort to make a good show. When you begin to pack the barrel turn it upside down, the head resting on the ground or floor; then take the bottom out, leaving the head in. Then choose about a peck of your prettiest and finest apples; wipe them clean, being certain that there are no spots on them, or in any other manner disfigured; then place them in the barrel with their stems down, first placing them around the rim of the barrel, entirely round the same, after which make another ring, until the whole is covered. Then throw in your apples, and when your barrel is full, press them down and put in the bottom, after which turn them head upwards. When the barrel is opened from the top, your apples will be found in good condition, even and nicely packed.

Apple Butter.—Select two bushels of sour apples, and peel, core and quarter them. Take a barrel of good, sweet apple cider, and boil in a copper kettle until all the impurities have arisen to the surface. After this is done, and the impurities skimmed off, take out two-thirds of the cider. Then put in the apples, and as the quantity boils down put in the rest of the cider. After putting in the apples the butter must be stirred without interruption until it is taken off. It will take about five hours' boiling after the apples are put into the cider. It should be boiled until the whole mass becomes smooth and of the same consistency, and of a dark brown colour. Spice with ground cloves and cinnamon to taste. The butter can then be taken off and put into vessels for use. Earthen crocks are best for this purpose. Tie the vessels over with heavy paper and set them away in a dry place. The butter will keep a year if wanted.

How to Keep Beans Fresh for Winter.—Procure a wide-mouthed stone jar, lay on the bottom of it some freshly-pulled French beans, and over them put a layer of salt; fill the jar up in this manner with alternate layers of beans and salt. The beans need not all be put in at the same time, but they are better if the salt be put on while they are quite fresh. They will keep good all through the winter. When going to use them, steep for some hours in fresh cold water.

How to Dry String Beans.—Dried string beans are very excellent in winter. Cut the beans up in the usual lengths, dry them, put them in a bag. In winter, soak them and cook them in the usual way.

How to Pickle Beef.—Rub each piece of beef very lightly with salt; let them lie singly on a tray or board for twenty-four hours, then wipe them very dry. Pack them closely in a tub, taking care that it is perfectly sweet and clean. Have the pickle ready, made thus: Boil four gallons of soft water with ten pounds of coarse salt, four ounces of saltpetre, and two pounds of coarse brown sugar; let it boil fifteen minutes, and skim it while boiling very clean. When perfectly cold pour it on the beef, laying a weight on the top to keep the meat under the pickle. This quantity is sufficient for 100 pounds of beef if closely packed.

How to Preserve Butter.—1. The best method to preserve butter from the air is to fill the pot to within an inch of the top, and to lay on it common coarse-grained salt, to the depth of one-half an inch or three-quarters of an inch, then to cover the pot up with any flat article that may be convenient. The salt by long keeping will run to brine, and form a layer on the top of the butter, which will effectually keep out the air, and may at any time be very easily removed by turning the pot on one side. 2. Fresh butter, sixteen pounds; salt, one pound. 3. Fresh butter, eighteen pounds; salt, one pound; saltpetre, one and one-fourth ounces; honey or fine brown sugar, two ounces.

How to Make Pennsylvania Apple Butter.—Let three bushels of fair sweet apples be pared, quartered, and the cores removed. Meanwhile let two barrels of new cider be boiled down to one-half. When this is done, commit the prepared apples to the cider, and let the boiling go on briskly and systematically, stirring the contents without cessation, that they do not become attached to the side of the kettle and be burned. Let the stirring go on till the amalgamated cider and apples become as thick as hasty-pudding; then throw in pulverised allspice, when it may be considered as finished, and committed to pots for future use.

How to Pack and Preserve Butter.—Packing butter that is gathered up at country shop is a nice operation, and needs to be carefully performed. As it is of all shades of colour, from white to pale yellow generally, a colouring may be prepared by melting some of the butter and dissolving in it the prepared annatto, which may be procured at any druggist's. This should be kept for use as it is wanted. To use it, take a quantity of the butter to be coloured in the mixing-bowl, cut into it gashes with the butter ladle (don't touch it with the hands), place a small portion of the colouring preparation in each of these gashes, and mix until the colour is evenly spread and no streaks are to be seen. Then gash it once more with the ladle, sprinkle one ounce of salt to the pound of butter, and leave it twenty-four hours. Then pour off any water collected on it, and pack it in a new oak tub that has been soaked with brine for a day and night. Water should never be used for working butter at any time.

How to Preserve Birds.—Birds may be preserved in a fresh state for some time by removing the intestines, wiping the inside out quite dry with a towel, and then flouring them. A piece of blotting paper, on which one or two drops of creosote have been placed, is now to be put inside them, and a similarly prepared piece of paper tied around them. They should then be hung up in a cool dry place, and will be found to keep much longer than without undergoing this process.

How to Keep Cabbage.—Gather them before the severe frosts. Let the coarse outside leaves remain on them. Fix a strong string around the stalk, and suspend the cabbage from the timbers of the ceiling, heads downward. The cellar should be cool and dry. This will preserve them with a certainty. Another good method is to cut the cabbage from the stump, pack close in a cask, taking care to fill up all the vacancies with dry chaff, or bran, and keep in a dry cellar.

How to Keep Cauliflower.—They can be kept in a cellar by covering the roots and stalks with earth till February. Or they may be placed in a trench in the garden, roots down, and covered with earth, up close to the heads, and then cover with hay or straw, four or five inches thick, placing just enough soil on the straw to keep it in its position. This method does well in the latitude of London; but in colder climates a thicker covering would be required.

How to Keep Celery.—This may be kept in good condition through the winter in a cool, dry cellar, by having it set in earth. When a small quantity only is wanted, take a box and stand the celery up in it, placing a little earth about the roots. The farmers who raise quantities of it often keep it in their old hot-beds; standing it up, and protecting it from frosts. There is no vegetable more relished than this, and every person who has a garden should raise enough for his own use, if no more.

How to Keep Sweet Cider.—Use only sound apples. Make the cider when the weather is almost cold enough to freeze the apples. Expose the cider during freezing weather, and stir it till the whole of it is reduced as near the freezing point as possible without freezing. Then barrel it, bung up tight, and place in a cellar kept nearly down to the freezing point. As long as you can keep it cold enough it will not ferment, and as long as it does not ferment it will remain sweet.

How to Dry Cherries.—Take the stems and stones from ripe cherries; spread them on flat dishes, and dry them in the hot sun or warm oven; pour whatever juice may have run from them, a little at a time, over them, stir them about that they may dry evenly. When they are perfectly dry, line boxes or jars with white paper, and pack them close in layers; strew a little brown sugar, and fold the paper over, and keep them in a dry place; or put them in muslin bags, and hang them in an airy place.

How to Store Eggs.—For purposes of long keeping for eating or breeding, eggs should be packed with the large end downward, instead of placing them on the small end, as is commonly done. The longer the eggs are kept the greater difference will be found in the results of the two methods. Experiment has proved that eggs placed as recommended may be set and successfully hatched, with remarkable uniformity, at ages which with the usual method of storing would render success almost hopeless. The practical philosophy of the case is alleged to consist in delaying the spread of the air bubble and its detachment from the membranous lining of the egg, thus retarding alterations destructive to vitality.

How to Dry Eggs.—The eggs are beaten to uniform consistency, and spread out in thin cakes on batter plates. This dries them in a paste, which is to be packed in close cans and sealed. When required for use, the paste can be dissolved in water and beaten to a foam like fresh eggs. It is said that eggs can be preserved for years in this way, and retain their flavour.

How to Pickle Eggs.—The jar is to be of moderate size—wide-mouthed earthen jar, sufficient to hold one dozen eggs; let the latter be boiled quite hard: when fully done, place the same, after taking them up, into a pan of cold water. Remove the shells from them and deposit them carefully in the jar. Have on the fire a quart or more of good white vinegar, into which put one ounce of raw ginger, two or three blades of sweet mace, one ounce of allspice, half an ounce of whole black pepper and salt, half an ounce of mustard seed, with four cloves of garlic. When it has simmered down, take it up and pour the contents into the jar, taking care to observe that the eggs are wholly covered. When quite cold, stopper it down for use. It will be ready after a month. When cut into quarters, they serve as a garnish, and afford a nice relish to cold meat of any kind.

How to Keep Eggs.—1. Parties in the egg business in a large way build brick vats made water tight, in which is lime water, made by putting lime in water, and when it is slacked and settled to the bottom, drawing off the liquor. Into this liquor the eggs are placed and kept beneath the surface. They are kept as cool as possible. These are the limed eggs with which the market is supplied during the winter. 2. Another mode of keeping eggs is as follows: Rub the eggs with flaxseed (linseed) oil, and place them, small end downwards, in sand. Eggs so prepared were found at the end of six months to have the same taste and smell as perfectly fresh eggs, and to have lost in weight only 3 per cent. Greasing eggs with lard or tallow has not been successful in preserving them, except for short periods. 3. Take a thin board of any convenient length and width and pierce it as full of holes (each one and a half inches in diameter) as you can. A board two feet and six inches in length and one foot wide, has five dozen holes in it, say twelve rows of five each. Then take four strips two inches broad and nail them together edgewise into a rectangular frame of the same size as your other board. Nail this board upon a frame and the work is done, unless you choose to nail a heading around the top. Put your eggs in this board as they come from the poultry house, the small ends down, and they will keep good for six months if you take the following precautions: Take care that the eggs do not get wet, either in the nest or afterwards. Keep them in a cool room in summer, and out of the reach of frost in winter. If two boards be kept, one can be filling while the other is emptying. 4. Eggs can easily be kept from October to March in the following manner: A piece of lime as large as a quart dipper, is put in five gallons of water, and salt added until an egg will float. This is strained and put into a clean keg, into which a loose head is made to fit easily; a knob is fitted to the head for a handle. The eggs are put, as they are gathered, into the liquid, and the loose head placed on them to keep them below the surface. The keg should be kept in a cool place in the cellar. The liquor will not freeze except at a lower temperature than freezing point. Eggs thus preserved will sell readily as limed eggs until fresh eggs come, and are almost as good as fresh ones. 5. Take one quart of unslacked lime, pour to it water enough to make it the consistency of whitewash, add one teaspoonful of cream of tartar; let this be in a wooden or stone vessel, and put the eggs into it. 6. Hang them by hooks in strong cabbage nets, and every day hook them on a fresh mesh, so as thereby to turn the eggs. 7. Apply with a brush a solution of gum arabic to the shells, or immerse the eggs therein, let them dry, and afterwards pack them in dry charcoal dust. This prevents their being affected by alterations of temperature. 8. Mix together in a tub or vessel, one bushel Winchester measure of quicklime, thirty-two ounces of salt, eight ounces of cream of tartar, with as much water as will reduce the composition to a sufficient consistence to float an egg. Then put and keep the eggs therein, which will preserve them perfectly sound for two years at least. 9. Eggs can be preserved by keeping them at a temperature of forty degrees or less in a refrigerator. Eggs have been tested when kept in this manner for two years and found to be perfectly good. 10. Dissolve three or four ounces of beeswax in seven ounces of warm olive oil; put in this the tip of your finger and anoint the egg all over. Keep the eggs in a cool place and they will keep fresh for five years.

How to Protect Dried Fruit from the Worms.—It is said that dried fruit put away with a little bark sassafras (say a large handful to the bushel) will save for years, unmolested by those troublesome little insects, which so often destroy hundreds of bushels in a single season. The remedy is cheap and simple, but we venture to say a good one.

How to Dry Gooseberries.—To seven pounds of red gooseberries add a pound and a half of powdered sugar, which must be strewed over them in the preserving pan; let them remain at a good heat over a slow fire till they begin to break; then remove them. Repeat this process for two or three days; then take the gooseberries from the syrup, and spread them out on sieves near the fire to dry. This syrup may be used for other preserves. When the gooseberries are quite dry, store them in tin boxes or layers of paper.

How to Keep Red Gooseberries.—Pick gooseberries when fully ripe, and for each quart take a quarter of a pound of sugar and a gill of water; boil together until quite a syrup; then put in the fruit, and continue to boil gently for fifteen minutes; then put them into small stone jars; when cold, cover them close; keep them for making tarts or pies.

How to Keep Grapes.—1. They must not be too ripe. Take off any imperfect grapes from the bunches. On the bottom of a keg put a layer of bran that has been well dried in an oven, or in the sun. On the bran put a layer of grapes, with bran between the bunches so that they may not be in contact. Proceed in the same way with alternate layers of grapes and bran, till the keg is full; then close the keg so that no air can enter. 2. In a box first lay a paper, then a layer of grapes, selecting the best bunches and removing all imperfect grapes, then another paper, then more grapes, and so on until the box is full; then cover all with several folds of paper or cloth. Nail on the lid, and set in a cool room where it will not freeze. We use small boxes so as not to disturb more than we want to use in a week or so. Give each bunch plenty of room so that they will not crowd, and do not use newspapers. Some seal the stems with sealing wax and wrap each bunch by itself, but we get along without that trouble. The grapes should be looked to several times during the winter. Should any mould or decay, they should be removed and the good ones again repacked. By this means we have had, with our pitcher of cider and basket of apples, our plate of grapes daily, besides distributing some among our friends and the sick of the neighbourhood. 3. (Chinese Method.) It consists in cutting a circular piece out of a rich pumpkin or gourd, making an aperture large enough to admit the hand. The interior is then completely cleaned out, the ripe grapes are placed inside, and the cover replaced and pressed in firmly. The pumpkin is then kept in a cool place—and the grapes will be found to retain their freshness for a very long time. We are told that a very careful selection must be made of the pumpkin, the common field pumpkin, however, being well adapted for the purpose in question.

How to Cure Hams.—To each green ham of eighteen pounds, one dessertspoonful of saltpetre; one-fourth pound of brown sugar applied to the fleshy side of the ham and about the hock; cover the fleshy side with fine salt half an inch thick, and pack away in tubs; to remain from three to six weeks according to size. Before smoking rub off any salt that may remain on the ham, and cover well with ground pepper, particularly about the bone and hock. Hang up and drain for two days; smoke with green wood for eight weeks, or until the rind assumes a light chestnut colour. The pepper is an effectual preventive of the fly. I never bag hams.

How to Keep Smoked Hams.—Make sacks of coarse cotton cloth, large enough to hold one ham, and fill in with chopped hay all around about two inches thick. The hay prevents the grease from coming in contact with the cloth, and keeps all insects from the meat. Hang in the smoke-house, or other dry, cool place, and they will keep a long time.

How to Dry Herbs.—They should be gathered in a dry season, cleansed from discoloured and rotten leaves, screened from earth or dust, placed on hurdles covered with blotting paper, and exposed to the sun or the heat of a stove, in a dry, airy place. The quicker they are dried the better, as they have less time to ferment or grow mouldy; hence they should be spread thin, and frequently turned; when dried they should be shaken in a large meshed sieve to get rid of the eggs of any insects. Aromatic herbs ought to be dried quickly with a moderate heat that their odour may not be lost. Cruciferous plants should not be dried, as in that case they lose much of their anti-scorbutic qualities. Some persons have proposed to dry herbs in a water-bath, but this occasions them, as it were, to be half boiled in their own water.

How to Keep Honey.—After the honey is passed from the comb, strain it through a sieve, so as to get out all the wax; gently boil it, and skim off the whitish foam which rises to the surface, and then the honey will become perfectly clear. The vessel for boiling should be earthen, brass, or tin. The honey should be put in jars, when cool, and tightly covered. To keep honey in the comb, select combs free from pollen, pack them edgewise in jars or cans, and pour in a sufficient quantity of the boiled and strained honey (as above) to cover the combs. The jars or cans should be tightly tied over with thick cloth or leather. These processes have been in use for twenty years with unvarying success.

How to Make Artificial Honey.—To ten pounds of good brown sugar add four pounds of water; gradually bring it to a boil, skimming it well. When it has become cooled, add two pounds of bees' honey and eight drops of peppermint. A better article can be made with white sugar instead of common, with one pound less of water, and one pound more of honey. To twenty pounds of coffee sugar add six pounds of water, four ounces cream of tartar, four tablespoonfuls of vinegar (strong), the white of two eggs, well beaten, and one pound of bees' honey. Lubin's extract of honeysuckle, twenty drops. Place the water and sugar in a kettle, and put it over a fire; when lukewarm add the cream of tartar, stirring it at the time; then add the egg, and when the sugar is melted, put in the honey and stir it well until it comes to a boil; then take it off, let it stand five minutes, then strain, adding the extract last. Let it stand over night, and it is ready for use.

How to Keep Horse-Radish.—Grate a sufficient quantity during the season, while it is green, put it in bottles, fill up with strong vinegar, cork them tight, and set them in a good place.

How to Keep Lard from Moulding.—It is not likely to mould if properly tried and kept in a cool, dry place. Earthen crocks or pans well tinned are good to put lard in for keeping. Lard made from intestinal fat will not keep so long as leaf fat. It should be soaked two or three days in salted water, changed each day.

How to Keep Lard Sweet.—Even during the warmest weather lard can be kept sweet by the following plan. When rendering (melting) it, throw into each kettle a handful of fresh slippery elm bark. No salt must be added to it at any time. The jars in which the lard is to be kept must be thoroughly cleansed.

How to Bleach Lard.—Lard may be bleached by applying a mixture of bichromate of potassa and muriatic acid, in minute proportions, to the fat.

How to Try Out Lard.—This should be done in the open air. Set a large kettle over the fire, in some sheltered place, on a still day. It will cook much quicker in large quantities. Put into the kettle, while the lard is cold, a little saleratus, say one tablespoonful to every twenty pounds; stir almost constantly when nearly done, till the scraps are brown and crisp, or until the steam ceases to rise; then there is no danger of its moulding; strain out into pans, and the first will be ready to empty into crocks when the last is strained.

How to Make Lard.—Cut the fat up into pieces about two inches square; fill a vessel holding about three gallons with the pieces; put in a pint of boiled lye made from oak and hickory ashes, and strained before using; boil gently over a slow fire, until the cracklings have turned brown: strain and set aside to cool. By the above process you will get more lard, a better article and whiter, than by any other process.

How to Keep Meat Fresh in Winter.—In Minnesota, where winter thaws are not much to be feared, it is quite common to hang up a porker or a leg of venison or beef, and cut from it as it hangs, week after week. It seems to us that meat so kept must greatly deteriorate in flavour. We like best to cut the beef or venison into good pieces for cooking in various ways, and pack them down in snow. Of course they freeze, but thawing a piece brought in to cook is a simple matter. Put frozen poultry or meat in cold water and all the frost will shortly leave it. A coating of ice will be found on the outside, which will easily cleave off.

How to Protect Meat from Fly.—An effectual way of excluding the fly is by using a wire meat-safe, or by covering the joints with a long loose gauze, or some thin cloth, and hanging them from the ceiling of a dry room. Pepper and ginger should be sprinkled on the parts likely to be attacked by the fly, but should be washed off before the joint is put to the fire.

How to Cure Meat.—To one gallon of water add one and a half pound of salt, half a pound of sugar, half an ounce of saltpetre, half an ounce of potash. In this ratio the pickle to be increased to any quantity desired. Let these be boiled together until all the dirt from the sugar rises to the top and is skimmed off. Then throw it into a tub to cool, and when cold pour it over your beef or pork, to remain the usual time, say four or five weeks. The meat must be well covered with pickle, and should not be put down for at least two days after killing, during which time it should be slightly sprinkled with powdered saltpetre, which removes all the surface blood, etc., leaving the meat fresh and clean. Some omit boiling the pickle, and find it to answer well, though the operation of boiling purifies the pickle by throwing off the dirt always to be found in salt and sugar. If this recipe is properly tried it will never be abandoned. There is none that surpasses it, if so good.

How to Pickle Meat.—Moist sugar, 2 pounds; bay or common salt, 4 pounds; saltpetre, ½ pound; fresh ground allspice, 2 ounces; water, 6 to 8 quarts. Dissolve. Used to pickle meat, to which it imparts a fine red colour and a superior flavour.

How to Keep Milk.—Milk may be preserved in stout, well-corked and wired bottles by heating them to the boiling point in a water-bath, by which the small quantity of enclosed air becomes decomposed. Milk, or green gooseberries, or peas, thus treated, will keep for two years. Some persons add a few grains of calcined magnesia to each bottle of milk before corking it.

Mince Meats.—Three pounds of raisins, stoned; three pounds of currants; three pounds of beef suet, chopped fine; one pound of bread crumbs; three-quarters of a pound of mixed candied peel; one and a half pound of fillet of beef, previously cooked; salt, sugar, spices and ginger to taste. Each ingredient to be chopped up separately, and very fine. Mix all well together, and take especial care that the beef is well mixed with the other ingredients. Moisten with a bottle of brandy and stir occasionally.

How to Keep Onions.—Gather in autumn and remove the tops; then spread upon a barn floor or in any open shed, and allow them to remain there until thoroughly dry. Put into barrels or small bins or boxes and place in a cool place, and at the approach of cold weather cover with straw or chaff, if there is danger of very severe freezing. Onions are often injured in winter by keeping them in too warm a place. They will seldom be injured by frost if kept in the dark, and in tight barrels or boxes, where not subjected to frequent changes of temperature. It is the alternate freezings and thawings that destroy them, and if placed in a position where they will remain frozen all winter, and then thawed out slowly and in a dark place, no considerable injury would result from this apparently harsh treatment. Onions should always be stored in the coolest part of the cellar, or put in chaff and set in the barn or some out-house.

How to Keep Parsnips.—The almost universal practice among farmers is to allow their parsnips to remain in the ground through winter, just where they were grown. We believe the quality of this root is improved by being frozen, or at least kept cool, but it is not necessary to leave them in the open garden during winter, where, if the ground remain frozen, they cannot be got at until it thaws in spring, and then used in a very few weeks or not at all. If the roots are dug up late in the autumn, leaving all the tops on, then carefully heeled in thickly together in rows, after which covered with a little coarse litter, they can be reached whenever wanted during winter.

How to Dry Peaches.—Never pare peaches to dry. Let them get mellow enough to be in good eating condition, put them in boiling water for a moment or two, and the skins will come off like a charm. Let them be in the water long enough, but no longer. The gain is at least sixfold—saving of time in removing the skin, great saving of the peach, the part of the peach saved is the best part, less time to stone the peaches, less time to dry them, and better when dried. A whole bushel can be done in a boiler at once, and the water turned off.

How to Can Peaches.—Pare and halve your peaches. Pack them as closely as possible in the can without any sugar. When the can is full, pour in sufficient pure cold water to fill up all the interstices between the peaches, and reach the brim of the can. Let them stand long enough for the water to soak into all the crevices—say six hours—then pour in water to replace what has sunk away. Seal up the can, and all is done. Canned in this way, peaches retain all their freshness and flavour. There will not be enough water in them to render them insipid. If preferred, a cold syrup could be used instead of pure water, but the peaches taste more natural without any sweet.

How to Preserve Green Peas.—When full grown, but not old, pick and shell the peas. Lay them on dishes or tins in a cool oven, or before a bright fire; do not heap the peas on the dishes, but merely cover them with peas; stir them frequently, and let them dry very gradually. When hard, let them cool, then pack them in stone jars, cover close and keep them in a very dry place. When required for use, soak them for some hours in cold water till they look plump before boiling; they are excellent for soup.

Piccalilli, Indian Method.—This consists of all kinds of pickles mixed and put into one large jar—sliced cucumbers, button onions, cauliflowers, broken in pieces. Salt them, or put them in a large hair sieve in the sun to dry for three days, then scald them in vinegar a few minutes, when cold put them together. Cut a large white cabbage in quarters, with the outside leaves taken off, and cut fine, salt it and put it in the sun to dry three or four days, then scald it in vinegar, the same as cauliflower; carrots, three parts, boiled in vinegar and a little bay salt. French beans, radish pods, and nasturtiums, all go through the same process as capsicums, etc. To 1 gallon of vinegar put 4 ounces of ginger bruised, 2 ounces of whole white pepper, 2 ounces of allspice, ½ ounce chillies bruised, 4 ounces of turmeric, 1 pound of the best mustard, ½ pound of shallots, 1 ounce of garlic, and ½ pound of bay salt. The vinegar, spice, and other ingredients, except the mustard, must boil half an hour; then strain it into a pan, put the mustard into a large basin, with a little vinegar; mix it quite fine and free from lumps, then add more. When well mixed put it into the vinegar just strained off, and when quite cold put the pickles into a large pan, and the liquor over them; stir them repeatedly, so as to mix them all. Finally, put them into a jar, and tie them over first with a bladder, and afterwards with leather. The capsicums want no preparation.

How to Store Potatoes.—Potatoes should not be exposed to the sun and light any more than is necessary to dry them after digging them from the hill. Every ten minutes of such exposure, especially in the sun, injures their edible qualities. The flesh is thus rendered soft, yellowish or greenish, and injured in flavour. Dig them when dry, and put them in a dark cellar immediately, and keep them there till wanted for use, and there would not be so much fault found about bad quality. This is also a hint to those grocers and marketmen who keep their potatoes in barrels in the sun—that is, if they wish to furnish their customers with a good article.

How to Keep Potatoes from Sprouting. To keep potatoes intended for use at the table from sprouting until new potatoes grow, take boiling water, pour into a tub, turn in as many potatoes as the water will cover, then pour off all the water, handle the potatoes carefully, laying up in a dry place on boards, only one layer deep, and see if you do not have good potatoes the year round, without hard strings and watery ends caused by growing.

How to Dry Pumpkins.—Take the ripe pumpkins, pare, cut into small pieces, stew soft, mash and strain through a colander, as if for making pies. Spread this pulp on plates in layers not quite an inch thick; dry it down in the stove oven, kept at so low a temperature as not to scorch it. In about a day it will become dry and crisp. The sheets thus made can be stowed away in a dry place, and they are always ready for use for pies or sauce. Soak the pieces overnight in a little milk, and they will return to nice pulp, as delicious as the fresh pumpkin. The quick drying after cooking prevents any portion from slightly souring, as is always the case when the uncooked pieces are dried; the flavour is much better preserved, and the after-cooking is saved.

How to Keep Rain-Water Sweet.—The best way to keep rain-water sweet in a cistern, is to first collect it in a tank, and filter it into the cistern below the surface. This will remove the organic matters, and prevent fermentation. Care should also be taken to prevent surface drainage into it.

How to Preserve Rosebuds.—A method employed in Germany to keep rosebuds fresh into the winter, consists in first covering the end of the recently cut stem with wax, and then placing each one in a closed paper cap or cone, so that the leaves do not touch the paper. The cap is then coated with glue, to exclude air, dust and moisture, and when dry it is stood up in a cool place. When wanted for use, the bud is taken out of the cap and placed in water, after cutting off the end, when the rose will bloom in a few hours.

How to Keep Sweet Potatoes.—Sweet potatoes can be kept by placing them in a bulk in a bin or box (the more the better) without drying, and maintaining for them a uniform temperature of 45° to 50°. Putting something between, among, or around them, may serve to keep them at the proper temperature, but it is of no value whatever aside from this; and if it should retain dampness, it will be a positive injury. After the sweat takes place, say in three or four weeks, scatter over them a light covering of dry loam or sand. In this way it is easy to keep sweet potatoes for table use or for seed, as well as "the inferior and less nourishing Irish potato." Another way is to pack in barrels, and pour in kiln-dried sand until the intervals are full; or boxes of uniform size, piled up on the side of a room where the temperature never falls to the freezing point, which is a condition of first importance. This wall of boxes may be papered over, and left undisturbed until spring, when the potatoes will command the highest prices.

How to Keep Sweet Potatoes in Bulk.—A sweet potato grower in Southern Illinois states that sweet potatoes will keep in bulk. He has kept seven hundred bushels in one pile. The potatoes should be dug before the vines are injured by frost, sunned until dry, and then placed in a cellar on a clay floor, putting fine hay or flax straw between the potatoes and the wall, and covering with the same material. The deeper and larger the pile the better. The hay or straw should be covered with clay, a thickness of one or two inches being sufficient for the climate of that region. At the top should be left one or more air-holes, according to the size of the pile, for the escape of steam. In damp, warm weather open a window or door in the daytime.

How to Make Hard Soap.—After the raw soda or barilla is ground or pounded, it is placed in a vat in alternate layers with unslacked lime, the bottom layer being lime. Water is allowed to infiltrate through those layers, and the lye is secured as it trickles through a hole in the bottom of the vat. The lime absorbs the carbonic acid of the soda, making the lye caustic or fit for the soap-kettle; and the quantity of lime applied must be in proportion to the quantity of carbonic acid in the soda. To every twenty pounds of tallow add one gallon of weak lye, and boil until the lye is spent. The mass must then cool for one hour, the spent lye drawn off, and another gallon of strong lye be added; the mixture again boiled until the second dose of lye is spent, and the same process must be repeated for several days, until the mixture, if properly managed, is converted into white tallow soap, which should be allowed to cool gradually and settle, when it is poured into moulds, and when solid it is cut into the bars which are found in our markets. Twenty pounds of tallow ought to make 30 pounds of first-quality hard soap, allowing three pounds of soda-ash for every 20 pounds of tallow. The balance of the weight is made up by the large quantity of water which enters into combination with the grease and alkali in the course of saponification. When yellow or resin soap is required, the hard soap has to be made in the usual manner, and at the last charge of lye, or when the soapy mass ceases to absorb any more lye, one-third the weight of pounded resin is introduced, the mixture constantly stirred, and the boil kept up vigorously until the resin has become incorporated with the soap. The whole must stand until it settles, and the soap then dipped out. Resin soap, when well made should be a fine bright colour.

How to Make Soft Soap.—The principal difference between hard and soft soaps is, that three parts of fat afford, in general, fully five parts hard soda-soap; but three parts of fat or oil will afford six or seven parts of potash-soap of a moderate consistence. From its cheapness, strength, and superior solubility, potash-soap is preferred for many purposes, particularly for the scouring of woollens. The lyes prepared for making soft soaps should be made very strong, and of two densities, as the process of making potash or soft soap differs materially from that of making soda or hard soap. A portion of the oil or fat being placed in the boiling-pan, and heated to near the boiling point of water, a certain portion of the weaker lye is introduced, and the fire kept up so as to bring the mixture to the boiling point; then some more oil and lye are introduced alternately, until the pan is filled. The boiling is continued gently, strong lye being added until the saponification is complete. The fire should then be removed, and some good soap, previously made, added while cooling down, to prevent any change by evaporation. One pound of oil requires about one-third of a pound of the best potash, and will make one and three-quarters to two pounds of well-boiled soap, containing about 40 per cent. of water. Sixty pounds of lard will make 100 pounds of first-class soft soap, by using one and a half cans of concentrated lye, which is made from salt, and is really a soda-lye.

How to Make Sauerkraut.—In the first place, let your "stand," holding from half a barrel to a barrel, be thoroughly scalded out, the cutter, the tub and the stamper also well scalded. Take off all the outer leaves of the cabbages, halve them, remove the heart, and proceed with the cutting. Lay some clean leaves at the bottom of the stand, sprinkle with a handful of salt, fill in half a bushel of cut cabbage, stamp gently until the juice just makes its appearance, then add another handful of salt, and so on until the stand is full. Cover over with cabbage leaves, place on top a clean board fitting the space pretty well, and on top of that a stone weighing twelve or fifteen pounds. Stand away in a cool place, and when hard freezing comes on remove to the cellar. It will be ready for use in from four to six weeks. The cabbage should be cut tolerably coarse. The Savoy variety makes the best article, but it is only half as productive as the Drumhead and Flat Dutch.

How to Make and Keep Sausage.—To make family sausage, the trimmings and other lean and fat portions of pork are used, taking care that there is about twice as much lean as fat; some consider it an improvement to add about one-sixth of the weight of lean beaf. As to seasoning, that is a matter of taste. The majority of people use salt, pepper, and sage only, some use only salt and pepper, while others, in addition to the above, put in thyme, mace, cloves and other spices. There is something repulsive about the intestines or "skins" used for stuffing sausage, and the majority preserve the meat in bulk. In cold weather it will keep for a long time, but if it is desired to preserve it beyond cold weather it needs some care. We have found that muslin bags, made of a size to hold a roll two and one-half or three inches in diameter, keep the meat very satisfactorily. These bags, when filled with sausage meat, are dipped into melted lard, and hung up in a dry, cool place. For seasoning, we use to one hundred pounds of meat forty ounces salt, and from eight to ten ounces of pepper.

How to Keep Suet.—Suet may be kept a year, thus: Take the firmest and most free from skin or veins, remove all traces of these, put the suet in the saucepan at some distance from the fire, and let it melt gradually; when melted, pour it into a pan of cold spring water; when hard, wipe it dry, fold it in white paper, put it in a linen bag, and keep it in a cool, dry place; when used, it must be scraped, and it will make an excellent crust with or without butter.

How to Can Tomatoes.—The most thorough and reliable mode of canning tomatoes is as follows: They are just sufficiently steamed, not cooked, to scald or loosen the skin, and are then poured upon tables and the skin removed are being taken to preserve the tomato in as solid a state as possible. After being peeled, they are placed in large pans, with false bottoms perforated with holes, so as to strain off the liquid that emanates from them. From these pans they are carefully placed by hand into the cans, which are filled as solidly as possible—in other words, all are put in that the cans will hold. They are then put through the usual process, and hermetically sealed. The cans, when opened for use, present the tomato not only like the natural vegetable in taste and colour, but also in appearance; and moreover, when thus sealed, they are warranted to keep in any climate, and when opened will taste as natural as when just plucked from the vine.

How to Clarify Tallow.—Dissolve one pound of alum in one quart of water, add to this 100 pounds of tallow in a jacket kettle (a kettle set in a larger one, and the intervening space filled with water; this prevents burning the tallow). Boil three-quarters of an hour and skim. Then add one pound of salt dissolved in a quart of water. Boil and skim. When well clarified the tallow should be nearly the colour of water.

How to Harden Tallow.—We have used the following mixture with success: To one pound of tallow take one-fourth of a pound common resin; melt them together, and mould them the usual way. This will give a candle of superior lighting power, and as hard as a wax candle; a vast improvement upon the common tallow candle in all respects except colour.

How to Make Tomato Catsup.—Take of perfectly ripe tomatoes ½ bushel; wash them clean and break to pieces; then put over the fire and let them come to a boil, and remove from the fire; when they are sufficiently cool to allow your hands in them, rub through a wire sieve; and to what goes through, add salt 2 teacups; allspice and cloves, ground, of each, 1 teacup; best vinegar, 1 quart. Put on to the fire again and cook one hour, stirring with great care to avoid burning. Bottle and seal for use. If too thick when used put in a little vinegar. If they were very juicy they may need boiling over an hour.

How to Keep Vegetables.—Sink a barrel two-thirds of its depth into the ground (a box or cask will answer a better purpose); heap the earth around the part projecting out of the ground, with a slope on all sides; place the vegetables that you desire to keep in the vessel; cover the top with a water-tight cover; and when winter sets in, throw an armful of straw, hay, or something of that sort, on the barrel. If the bottom is out of the cask or barrel, it will be better. Cabbages, celery, and other vegetables, will keep in this way as fresh as when taken from the ground. The celery should stand nearly perpendicular, celery and earth alternating. Freedom from frost, ease of access, and especially freshness, and freedom from rot, are the advantages claimed.

How to Make Cider Vinegar.—1. The most profitable return from such apples as are made into cider is the further transformation of the juice into vinegar. To do this, the barrels should be completely filled, so that all impurities that "working"—fermenting—throws off will be ejected through the bung-hole. This process should be completed before the barrel is put in the cellar, and when this is done, the purified juice should be drawn out of the original cask and put into others where there is a small amount of old vinegar, which will amazingly hasten the desired result. If no vinegar can be obtained to "start" the cider, it must remain in a dry cellar six months, and perhaps a year (the longer the better), before it will be fit for the table. 2. Save all your apple parings and slice in with them all waste apples and other fruits; keep them in a cool place till you get a pailful, then turn a large plate over them, on which a light weight should be placed, and pour on boiling water till it comes to the top. After they have stood two or three days pour off the liquid, which will be as good cider as much that is offered for sale; strain and pour it into a cask or some other convenient vessel (anything that can be closely covered will do), and drop in a piece of "mother," or vinegar plant, procured of some one that has good vinegar. If set in a warm place, the vinegar will be fit for use in three or four weeks, when it can be drawn off for use, and the cask filled with cider made from time to time by this process. The parings should be pressed compactly into a tub or pail, and only water enough poured over to come to their surface, otherwise the cider would be so weak as to require the addition of molasses. By having two casks, one to contain the vinegar already made, and the other to fill into from time to time, one never need be without good vinegar. The rinsings of preserve kettles, sweetmeat jars, and from honey, also stale beer and old cider, should all be saved for the vinegar cask; only caution should be used that there be sufficient sweetness or body to whatever is poured in, or the vinegar may die from lack of strength. 3. A barrel or a cask of new sweet cider, buried so as to be well covered with fresh earth, will turn to sharp, clear, delicious vinegar in three or four weeks, as good as ever sought affinity with cabbage, pickles, or table sauce, and better than is possible to make by any other process.

How to Preserve Pickles.—The strongest vinegar must be used for pickling; it must not be boiled, or the strength of the vinegar and spices will be evaporated. By parboiling the pickles in brine they will be ready in much less time than they are when done in the usual manner, of soaking them in cold water for six or eight days. When taken out of the hot brine, let them get cold and quite dry before you put them into the pickle. To assist the preservation of pickles, a portion of salt is added, and for the same purpose, and to give flavour, long pepper, black pepper, allspice, ginger, cloves, mace, eschalots, mustard, horseradish, and capsicum. The following is the best method of preparing the pickle, as cheap as any, and requires less care than any other way: Bruise in a mortar four ounces of the above spices, put them into a stone jar with a quart of the strongest vinegar, stop the jar closely with a bung, cover that with a bladder soaked with pickle, set it on a trivet by the side of the fire for three days, well shaking it up at least three times in the day; the pickle should be at least three inches above the pickles. The jar being well closed, and the infusion being made with a mild heat, there is no loss by evaporation. To enable the articles pickled more easily and speedily to imbibe the flavour of the pickle they are immersed in, previous to pouring it on them, run a larding-pin through them in several places. Pickles should be kept in a dry place in unglazed earthenware or glass jars, which are preferable, as you can, without opening them, observe whether they want filling up; they must be carefully stopped with well-fitted bungs, and tied over as closely as possible with a bladder wetted with the pickle; and if it be preserved a long time after that is dry, it must be dipped in bottle cement. When the pickles are well used, boil up the liquor with a little fresh spice. To walnut liquor may be added a few anchovies and eschalots; let it stand till it is quite clear, and bottle it; thus you may furnish the table with an excellent savoury, keeping sauce for hashes, made dishes, fish, etc., at very small cost. Jars should not be more than three parts filled with the articles pickled, which should be covered with pickle at least two inches above their surface; the liquor wastes, and all of the articles pickled that are not covered, are soon spoiled. When they have been done about a week, open the jars, and fill them up with pickle. Tie a wooden spoon, full of holes, round each jar, to take them out with. If you wish to have gherkins, etc., very green, this may be easily accomplished by keeping them in vinegar, sufficiently hot, till they become so. If you wish cauliflowers, onions, etc., to be white, use distilled vinegar for them. To entirely prevent the mischief arising from the action of the acid upon the metallic utensils usually employed to prepare pickles, the whole of the process is directed to be performed in unglazed stone jars.

How to Pickle Beets.—Boil your beets till tender, but not quite soft. To four large beets, boil three eggs hard, and remove the shells; when the beets are done, take off the skin by laying them for a few minutes in cold water, and then stripping it off; slice them a quarter of an inch thick, put the eggs at the bottom, and then put in the beets with a little salt. Pour on cold vinegar enough to cover them. The eggs imbibe the colour of the beets, and look beautiful on the table.

Beet-Root Pickled.—Simmer the roots till three-parts done (from one and a half to two and a half hours); then take them out, peel, and cut them in thin slices. Put them into a jar, and pour on sufficient cold spiced vinegar to cover them.

Cabbage, Pickled.—Choose a fine, close cabbage for the purpose of pickling, cut it as thin as possible, and throw some salt upon it. Let it remain for three days, when it will have turned a rich purple; drain from it the salt, and put it into a pan with some strong vinegar, a few blades of mace, and some white peppercorns. Give it a scald, and when cold, put it into jars, and tie it up close.

Cucumbers, Pickled.—Make a brine by putting one pint of rock salt into a pail of boiling water, and pour it over the cucumbers; cover tight to keep in the steam, and let them remain all night, and part of a day; make a second brine as above, and let them remain in it the same length of time; then scald and skim the brine, as it will answer for the third time, and let them remain in it as above; then rinse and wipe them dry, and add boiling hot vinegar; throw in a lump of alum as large as an oil-nut to every pail of pickles, and you will have a fine, hard and green pickle; add spices if you like, and keep the pickles under the vinegar. A brick on the top of the cover, which keeps the pickles under, has a tendency to collect the scum to itself, which may arise.

Cherries, Pickled.—Take the largest and ripest red cherries, remove the stems, have ready a large glass jar, fill it two-thirds full with cherries, and fill up to the top with the best vinegar; keep it well covered, and no boiling or spice is necessary, as the cherry flavour will be retained, and the cherries will not shrivel.

Chopped Pickles.—What we call chopped pickle goes also under the name of chow-chow, picklette, higdum, etc. It is liked by most persons, is readily made, and admits of the use of a number of articles. There is no particular rule for making it, and the bases may be of whatever pickle-making material is most abundant. We have just put up our winter stock, and this time made it as follows: Green tomatoes furnished the largest share; then there were nearly ripe cucumbers with the seeds removed, cabbage, onions, and green-peppers. These were chopped in a chopping-machine, and mixed, sprinkled freely with salt, and allowed to stand until the next day. The abundant juice was then thoroughly drained off, and enough spiced vinegar prepared to cover the material. No rule can be given for the spice, which may be according to taste. Whole pepper, cloves, mustard-seed, broken cinnamon, or whatever spice is fancied, may be boiled in the vinegar. We prefer it with the addition of sugar. Some mix up mustard and add to the pickle when cold, and others boil turmeric in the vinegar to give it a uniform yellow colour. It is a pickle that can be made according to fancy, rather than according to rule. In winter, cabbage, celery, and onions, treated in the same way, make a very fine pickle. As with other pickles, the vinegar should be poured off and boiled, at intervals of a few days, two or three times before it is put away for the winter.

Cauliflower and Broccoli.—These should be sliced, and salted for two or three days, then drained, and spread upon a dry cloth before the fire for twenty-four hours; then put into a jar and covered with spiced vinegar. Dr. Kitchener says, that if vegetables are put into cold salt and water (a quarter of a pound of salt to a quart of water), and gradually heated to boiling, it answers the same purpose as letting them lie some days in salt.

Crab-Apple, Sweet, Pickled.—Boil the fruit in clear water until it becomes a little soft; then drain them on a large dish; then to every pound of fruit add one of sugar, and boil hard until they are preserved. To make the pickles, take one-half syrup and one-half vinegar; fill the jar with the preserves, and pour on the syrup and vinegar; add spices to suit the taste.

Gherkins, Pickled.—Steep them in strong brine for a week, then pour it off, heat it to a boiling point, and again pour it on the gherkins; in twenty-four hours drain the fruit on a sieve, put it into wide-mouthed bottles or jars, fill them up with strong pickling vinegar, boiling hot, bung down immediately, and tie over with a bladder. When cold, dip the corks into melted bottle wax. Spice is usually added to the bottles, or else steeped in the vinegar. In a similar way are pickled: onions, mushrooms, cucumbers, walnuts, samphires, green gooseberries, cauliflowers, melons, barberries, peaches, lemons, tomatoes, beans, radish pods, codlins, red cabbage (without salt, and with cold vinegar), beetroot (without salt), garlic, peas, etc., etc.; observing that the softer and more delicate articles do not require so long soaking in brine as the harder and coarser kinds, and may be often advantageously pickled by simply pouring very strong pickling vinegar over them, without applying heat.

Green-Ginger, Pickled.—Clean and slice the ginger; sprinkle with salt; let it remain a few hours; then put it into a jar or bottle, and pour boiling vinegar over it; cork it up when cool.

Limes, Pickled.—They should be small, and with thin rinds. Rub them with pieces of flannel, then slit them half down in four quarters, but not through to the pulp. fill the slits with salt, hard pressed in; set them upright in a pan for four or five days until the salt melts; turn them three times a day in their own liquor until tender; make a sufficient quantity of pickle to cover them, of vinegar, the brine of the lemons, pepper and ginger; boil and skim it, and when cold, put it to the lemons with two ounces of mustard seed, and two cloves of garlic to every six lemons. In boiling the brine care should be taken to use a well-tinned copper saucepan only, otherwise it will be discoloured.

Mixed Piccalilli, Pickled.—To each gallon of strong vinegar put four ounces of curry powder, four ounces of good flour mustard, three ounces of bruised ginger, two ounces of turmeric, eight ounces of skinned eschalots, and two ounces of garlic (the last two slightly baked in a Dutch oven), one-fourth pound of salt, and two drachms of cayenne pepper. Digest these near the fire, as directed above for spiced vinegar. Put into a jar, gherkins, sliced cucumbers, sliced onions, button onions, cauliflower, celery, broccoli, French beans, nasturtiums, capsicums, large cucumbers, and small lemons. All, except the capsicums, to be parboiled in salt water, drained, and dried on a cloth before the fire. Pour on them the above pickle.

Mushrooms, Pickled.—To preserve the flavour, buttons must be rubbed with a piece of flannel and salt, and from the large ones take out the red inside, for when they are black they will not do, being too old. Throw a little salt over, and put them in a stewpan with some mace and white pepper; as the liquor comes out, shake them well, and simmer them over a gentle fire till all of it is dried into them again; then put as much vinegar into the pan as will cover them; make it warm, then put all into glass jars or bottles, and tie down with a bladder. They will keep two years, and are delicious.

Mixed Pickles.—One large white cabbage, beans, green tomatoes, gherkins and green pepper (the veins to be cut out), without regard to quantity; chop them up finely, and place in separate vessels; salt them, and let them stand twenty-four hours; squeeze them through a sieve, mix all together, and flavour with mustard-seed, spice, cloves, black pepper, and horse-radish; pour on scalding vinegar; cut up two large onions and throw in, and let them stand twenty-four hours; then pour off the vinegar, and fill up with cold.

Onions, Pickled.—Scald one gallon of small onions in salt water of the strength to bear an egg. Only just let them boil; strain them off, and peel them after they are scalded, place them in a jar, and cover them with the best cold vinegar. The next day pour the vinegar off, add two ounces of bruised ginger, one ounce of white pepper, two ounces of flour of mustard seed, half an ounce chillies; boil them twenty minutes, turn all together, boiling hot, to the onions; let them remain ten days, turn the vinegar out again, boil as before, turn them hot on the onions again. They will be ready for use as soon as quite cold.

How to make Peach Pickles.—Take any quantity of fine peaches just before they are ripe, stick into each five or six cloves: make a syrup of three pints of vinegar and three pounds of peaches; add cinnamon if you like. Bring the syrup to a boil, and pour hot over them; repeat the process for three days, or until they are shrunk on the pit. After the last scald, they should be well covered, and put away in a very cool cellar until cold weather sets in. They will be ready to use, however, in a few days after they are pickled.

How to Colour Pickles Green.—A beautiful green colour, entirely destitute of any poisonous qualities, may be made by dissolving five grains of saffron in one-fourth ounce distilled water; and in another vessel dissolving four grains of indigo carmine in one-half ounce distilled water. After shaking each up thoroughly, they are allowed to stand for twenty-four hours, and on being mixed together at the expiration of that time, a fine green solution is obtained, capable of colouring five pounds of sugar.

How to Pickle Peppers.—Soak fresh, hard peppers in salt and water for nine days, in a warm place, changing the brine every day; then put them in cold vinegar. If the pickles are not required very hot, take out the seeds from the greater portion of the peppers.

How to Pickle Sweet Plums.—Take seven pounds of fruit, put them in a jar with three and one-half pounds of sugar, one quart best vinegar, two ounces stick cinnamon, two ounces cloves; the whole boiled together and thrown over the fruit three days.

How to Pickle Roots.—Roots, such as carrots, salsify and beet-root, may be pickled by being sliced, or cut into small pieces; and slightly boiled in vinegar without destroying their crispness, and adding the common spices; with beet-root, put button onions, or cut some Spanish onions in slices, lay them alternately in a jar; boil one quart of vinegar with one ounce of mixed pepper, half an ounce of ginger, and some salt, and pour it cold over the beet-root and onions.

How to make Sweet Pickles.—For pickling all kinds of fruit to keep good the year round, the following rule is safe: To three pounds of sugar add one pint of good vinegar, spices to your taste; boil it together, then let it cool; fill the jars with clean and sound fruit, such as peaches, pears, plums, cherries and grapes (each kind in a separate jar); then, when the vinegar is cool, put it on the fruit; let it stand all night, then turn off the liquor, and boil it down a little; then let it cool, and pour it in the jars; cover them nicely, and put them in a cool place. If in time you discover a white scum on the top, skim it off, turn off the vinegar, add a little sugar, and boil it; when cool, pour it on the fruit again, and you will have a delightful pickle. For peach mangoes, these are excellent. Take sound, ripe, free-stone peaches; wipe off the fur; split them open; take out the stone; have ready some fine chopped tomatoes, cabbage, horse-radish, and mustard-seed; fill the vacancy in the peach; then place them together, and tie them with a string; fill your jars with prepared vinegar.

How to Pickle Tomatoes.—Always use those which are thoroughly ripe. The small, round ones are decidedly the best. Do not prick them, as most recipe books direct. Let them lie in strong brine three or four days, then put them down in layers in your jars, mixing with them small onions and pieces of horse-radish; then pour on the vinegar (cold), which should be first spiced as for peppers; let there be a spice-bag to throw into every pot. Cover them carefully, and set them by in a cellar for a full month before using.

How to Pickle Green Tomatoes.—To one peck of tomatoes add a handful of salt, and enough water to cover them. Let them remain in this twenty-four hours. Put them in a kettle (porcelain-lined is the best), fill up with vinegar, and set upon the stove until the vinegar begins to boil, then set away to cool. When cold, set the kettle again upon the stove, and bring it to the boiling point. Then skim the tomatoes, and put them into a jar; fill up with some new, cold vinegar, and flavour with mustard-seed, allspice, cloves, etc. The same vinegar first used will do to scald more tomatoes in.

Hints on Preserving.—A very common discovery made by those who preserve fruits, etc., is, that the preserve either ferments, grows mouldy, or becomes candied. These three effects arise from three separate causes. The first from insufficient boiling; the second from being kept in a damp place, assisted in some degree by the first cause; and the third from being too quick and too long in boiling. Preserves of all kinds should be kept entirely secluded from the air, and in a dry place. In ranging them on the shelves of a store-closet, they should not be suffered to come in contact with the wall. Moisture in winter and spring exudes from some of the driest walls, and preserves invariably imbibe it, both in dampness and taste. It is necessary occasionally to look at them, and if they have been attacked by mould boil them up gently again. To prevent all risks it is always as well to lay a brandy paper over the fruit before tying down. This may be renewed in the spring. Fruit jellies are made in the ratio of a quart of fruit to two pounds of sugar. They must not be boiled quick, nor very long. Practice, and a general discretion, will be found the best guide to regulate the exact time, which must necessarily be affected, more or less, by local causes.

How to Preserve Fruits without Self-Sealing Cans.—Prepare a cement of one ounce of resin, one ounce of gum shellac, and a cubic inch of beeswax; put them in a tin cup and melt slowly; too high or too quick heat may cause it to scorch. Place the jars where they will become warm while the fruit is cooking. If they are gradually heated there is no danger of breaking. As soon as the fruit is thoroughly heated, and while boiling hot, fill the jars full, letting the juice cover the fruit entirely. Have ready some circular pieces of stout, thick cotton or linen cloth, and spread over with cement a piece sufficient to cover the mouth and rim of the jar. Wipe the rim perfectly dry, and apply the cloth while warm, putting the cement side down, bring the cover over the rim, and secure it firmly with a string; then spread a coating of cement over the upper surface. As the contents of the jar cool, the pressure of the air will depress the cover, and give positive proof that all is safe.

How to Preserve Small Fruits Without Cooking.—Strawberries, raspberries, blackberries, cherries and peaches can be preserved in this manner. Lay the ripe fruit in broad dishes, and sprinkle over it the same quantity of sugar used in cooking it. Set it in the sun, or a moderately heated oven, until the juice forms a thick syrup with the sugar. Pack the fruit in tumblers, and pour the syrup over it. Paste writing paper over the glasses, and set them in a cool, dry place. Peaches must be pared and split, and cherries stoned. Preserved in this manner, the fruit retains much more of its natural flavour and healthfulness than when cooked.

How to Preserve Fruits without Sugar or Vinegar.—Pick the fruit from the stalks; put them into the bottles. Put one drachm of alum into four gallons of boiling water; let it stand till it is cold; then fill the bottles with this liquor, bung them tight, put them into a copper of cold water, and heat to 176°; and then tie them over with bladder and seal them.

How to Preserve Fruits by Syrup without Heat.—Many fruits when preserved by boiling lose much of their peculiar and delicate flavour, as for instance pine-apples; and this inconvenience may, in some instances, be remedied by preserving them without heat. Cut the fruit in slices, about one-fifth of an inch thick; strew powdered loaf-sugar an eighth of an inch thick in the bottom of a jar, and put the slices on it. Put more sugar on this, and then another layer of the slices, and so on, till the jar is full. Place the jar with the fruit up to the neck in boiling water, and keep it there until the sugar is completely dissolved, which may take half an hour, removing the scum as it rises. Lastly tie a wet bladder over the mouth of the jar, or cork and wax it.

How to Preserve Apples.—Pare and core and cut them in halves or quarters; take as many pounds of the best brown sugar; put a teacupful of water to each pound. When it is dissolved set it over the fire; and when boiling hot put in the fruit and let it boil gently until it is clear and the syrup thick; take the fruit with a skimmer on to flat dishes; spread it to cool; then put it in pots or jars and pour the jelly over. Lemons boiled tender in water and sliced thin may be boiled with the apples.

How to Preserve Crab Apples.—Take off the stems and core them with a sharp knife without cutting them open; weigh a pound of white sugar for each pound of apples; put a teacupful of water to each pound of sugar, and then put it over a slow fire. When the sugar is dissolved and hot put the apples in; let them boil gently until they are clear, then skim them, cut and spread them on flat dishes. Boil the syrup until it is thick; put the syrup in whatever they are to be kept, and when the syrup is cold and settled, pour it carefully over the fruit. Slices of lemon boiled with the fruit is to some an improvement; one lemon is sufficient for several pounds of fruit. Crab apples may be preserved whole with three-quarters of an inch of stem on, three-quarters of a pound of sugar for each pound of fruit.

How to Preserve Whole Apricots.—Take the largest and cleanest apricots to be got; pick out the stones with a silver skewer, or slit them down the sides with a silver knife; take nearly their weight in good lump sugar; dip each lump in water and put over the fire; let it just boil; skim and put by till cold; then pour it over the fruit in the preserving can, warm very gently and only allow them to simmer; then put them by till next day, and warm them again; continuing this till they look clear; then take the fruit from the syrup. The latter must now be well boiled and skimmed, and when cold poured over the fruit.

How to Preserve Citron Melon.—Pare, core and cut into slices some fine citron melons. Weigh them. To six pounds of melon allow six pounds of refined sugar, the juice and grated rind of four large lemons, and a quarter of a pound of root ginger. Boil the slices of melon half an hour or more, till they look quite clear and are so tender that a broom straw will pierce them. Then drain them, lay them in a pan of cold water, cover them, and let them stand all night. In the morning tie the root ringer in a thin muslin cloth, and boil it in three pints of clear water till the water is highly flavoured; take out the bag of ginger and pour the water over the pieces of sugar, which is previously broken and put in a preserving kettle. When the sugar is melted, set it over the fire, put in the grated peel of the lemons and boil and skim it till no more scum rises. Then put in the sliced citrons and the juice of the lemons; boil them in the syrup till all the slices are quite transparent, and so soft that a straw will go through them, but do not break them. When done put the slices, still warm, into jars, and gently pour over the syrup. This will be found delicious.

How to Preserve Cucumbers to Imitate Ginger.—Take small cucumbers, with flowers and stalks on them, and some large ones gathered dry; put them in a stone jar with salt and water enough to cover them; then put cabbage leaves on the top to cover them close, and set them in the chimney corner for a fortnight until they are turned yellow; then drain the water away and throw away the cabbage leaves, which will smell very strong, almost to putrefaction; split the large ones, take out the seed, put them in an earthen pipkin over the fire with weak salt and water; cover them close, and let them cook gently for ten hours, when they will look a little green, and are very clean; take them off the fire and drain them, and put them into cold water, shifting them twice a day for two days; then drain them and dry them in a fine cloth. Have ready a thin syrup with a good deal of whole ginger boiled in it, and some lemon peel; when it is cold put it on the cucumber. Boil up the syrup every day for a fortnight, and when it is cold pour it on as before. Tie them down with a bladder, and a leather and a paper under it, and keep them in a cool, dry place. A pint of water to a pound of sugar is a good proportion for the syrup.

How to Preserve Whole Seville Oranges.—Cut a hole at the stem end of the oranges the size of a threepenny piece, take out all the pulp, put the oranges into cold water for two days, changing it twice a day; boil them rather more than an hour, but do not cover them, as it will spoil the colour; have ready a good syrup, into which put the oranges, and boil them till they look clear; then take out the seeds, skins, etc., from the pulp first taken out of the oranges, and add to it one of the whole oranges previously boiled, with an equal weight of sugar to it and the pulp; boil this together till it looks clear over a slow fire, and when cold, fill the oranges with this marmalade, and put on the tops; cover them with syrup, and put brandy paper on the top of the jar. It is better to take out the inside at first, to preserve the fine flavour of the juice and pulp, which would be injured by boiling in the water.

How to Preserve Grapes in Bunches.—Take out the stones from the grapes with a pin, breaking them as little as possible; boil some clarified sugar nearly to candy height; then put in sufficient grapes to cover the bottom of the preserving-pan, without laying them on each other, and boil for five minutes, merely to extract all the juice; lay them in an earthen pan, and pour the syrup over them; cover with paper, and the next day boil the syrup, skimming it well for five minutes; put in the grapes, let them boil a minute or two; put them in pots, and pour the syrup over them, after which tie down.

How to Preserve Imitation of Ginger.—Boil, as if for the table, small, tender, white carrots; scrape them until free from all spots, and take out the hearts. Steep them in spring water, changing it every day, until all vegetable flavour has left them. To every pound of carrots so prepared add one quart of water, two pounds of loaf sugar, two ounces of whole ginger, and a rind of lemon shred fine. Boil for a quarter of an hour every day, until the carrots clear, and when nearly done, add red pepper to taste. This will be found a good imitation of West Indian preserved ginger.

How to Preserve Melon like Ginger.—When the melon is nearly ripe, pare it thin, and cut it into pieces about the size of ginger; cover it with salt water, changing every day for three days; then put in clear spring water, changing it twice a day for three days. Then make a thin syrup, and boil it together with the melon once a day for three days; next make a thick syrup, adding the rind of one or more lemons, according to the quantity of melon, cut into narrow strips, and the juice squeezed in; then add some best white ginger, with the outside cut off, so as to make the syrup strong of the ginger. This should be boiled, and when cold put to the melon.

How to Preserve Currants.—Take ripe currants, free from stems; weigh them, and take the same weight of sugar; put a teacupful of sugar to each pound of it; boil the syrup until it is hot and clear; then turn it over the fruit; let it remain one night; then set it over the fire and boil gently, until they are cooked and clear; take them into the jars or pots with a skimmer; boil the syrup until rich and thick; then pour it over the fruit. Currants may be preserved with ten pounds of fruit to seven of sugar. Take the stems from seven pounds of the currants, and crush and press the juice from the remaining three pounds; put them into the hot syrup and boil until thick and rich; put it in pots or jars, and the next day secure as directed.

How to Preserve Cherries.—Take fine large cherries, not very ripe; take off the stems and take out the stones; save whatever juice runs from them; take an equal weight of white sugar; make the syrup of a teacupful of water for each pound; set it over the fire until it is dissolved and boiling hot; then put in the juice and cherries; boil them gently until clear throughout; take them from the syrup with a skimmer and spread them on flat dishes to cool; let the syrup boil until it is rich and quite thick; set it to cool and settle; take the fruit into jars or pots and pour the syrup carefully over; let them remain open until the next day; then cover as directed. Sweet cherries are improved by the addition of a pint of red currant juice and half a pound of sugar to it for four or five pounds of cherries.

How to Preserve Damsons.—Put a quart of damsons into a jar with a pound of sugar strewed between them; set the jar in a warm oven, or put it into a kettle of cold water and set it over the fire for an hour, then take it out, set to become cold, drain the juice off, boil it until it is thick, then pour it over the plums; when cold, cover as directed for preserves.

How to Preserve Dewberries.—Pick your berries early in the morning, weigh them, then spread them on dishes, sprinkle them with sugar in the due proportion assigned them (pound for pound). When the juice settles from them in the dishes, pour it off, and with it moisten the remainder of the sugar; simmer this over a slow fire, and, while simmering, drop in a portion of the berries: let them become clear, and return them to the dishes to cool, while the remainder take their place in the kettle. When all are clear, and the syrup boiled down to a rich consistency, pour it over them, and when cool enough, transfer them to glass jars.

How to Preserve Greengages.—Select well-grown greengages, but not the least ripe; prick them with a fork to the stone, and as soon as pricked, put them in water in a preserving-pan. When they are all done, put them over a slow fire to simmer very gently, so as to make them tender without breaking; try them with a fork, and when tender to the stone, put them in cold water, and as some will get soft before others, they must be watched carefully; let them lie in water a day and a night; strain them, and when well drained, put them in an earthen pan, and pour over them some boiling hot clarified sugar sufficient to cover them; put a paper over them; the next day, pour off the syrup and boil it; if three quarts or thereabouts, boil for ten minutes, then pour it over the fruit, and again lay the paper over them. Boil the syrup every other day in the same manner until it is about the consistence of cream (in five or six boilings). If the syrup shrinks, so as not to keep the fruit well covered, add a fresh supply. While boiling the syrup the third time, put the greengages in, and let them simmer gently for a short time, which will bring them green; and the last time of boiling the syrup, let them simmer a little in it.

How to Preserve Gooseberries.—Take full-grown gooseberries before they are ripe, pick them, and put them in wide-mouthed bottles; cork them gently with new, soft corks, and put them in an oven from which the bread has been drawn; let them stand till they have shrunk nearly a quarter, then take them out, and beat the corks in tight; cut them off level with the bottle, and resin them down close. Keep in a dry place.

How to Preserve Grapes in Vinegar.—Grapes are preserved in vinegar by the Persians after the following fashion: The grapes are gathered when half ripe, and put into bottles half filled with vinegar, which so macerates them that they lose their hardness, and yet do not become too soft. The grapes have a sweet acid taste, which is not unpalatable, and is especially refreshing during the great heats.

How to Preserve Huckleberries.—The huckleberries may be easily kept for winter use by putting them in bottles or cans, without adding anything to them, and without cooking. The mouths of the cans should be tightly closed, and the cans should be buried, mouth downward, in a box of sand. When taken out of the sand for use in the winter, the colour of the berries is slightly changed, but the shape and flavour are preserved in perfection. They make excellent pies.

How to Preserve Green Ginger.—Scrape and clean your green ginger well; to each pound of green ginger put a pint and a half of water; boil it down one-third; skim carefully while boiling, then strain off the liquid; add a pound of sugar candy, and boil the ginger in it until quite tender.

How to Preserve Mushrooms.—The small open mushrooms suit best. Trim and rub them clean, and put into a stewpan a quart of the mushrooms, three ounces of butter, two teaspoonfuls of salt, and half a teaspoonful of cayenne pepper and mace mixed; stew until the mushrooms are tender; take them carefully out, and drain them on a sloping dish. When cold, press into small pots, and pour clarified butter over them. Put writing paper over the butter, and on that pour melted suet, which will exclude the air, and preserve them for many weeks, if kept in a dry, cool place.

How to Preserve Mock Ginger.—Cut off the stocks of lettuce just going to seed, and peel off the strings, cut them in pieces two or three inches long, and throw them into water; after washing them, put them into sugar and water, mixed in the proportion of one pound of sugar to five pints of water, add to this quantity two large spoonfuls of pounded ginger. Boil the whole together for twenty minutes, and set it by for two days. Then boil it again for half an hour, and renew this five or six times in the same syrup. Then drain the stalks upon a sieve, and wipe them dry; have ready a thick syrup boiled, and make strong with whole ginger. Pour it upon the stalks boiling hot, boil them in it once or twice, or until they look clear, and taste like the West-India ginger.

How to Preserve Orange-peel.—Clean carefully; cut in thin strips; stew in water until the bitterness is extracted; drain off the water, and stew again for half an hour in a syrup of sugar and water, allowing a half-pint of water and a pound of sugar to each pound of peel. Put it aside in jars, and keep it in a cool place. If desired, a little cinnamon and ginger may be stewed with the peel, but it is more delicately cooked simply with sugar. Lemon peel may be prepared in the same manner, either alone or mixed with orange-peel. These form pleasant "relishes" eaten with cake or bread, or if chopped finely when prepared, they form excellent flavouring for puddings and pies.

How to Preserve Pears.—Take six pounds of pears to four pounds of sugar, boil the parings in as much water as will cover them, strain it through the colander, lay some pears in the bottom of your kettle, put in some sugar, and so on, alternately, then pour the liquor off the pear-skins over, boil them until they begin to look transparent, then take them out, let the juice cool, and clarify it; put the pears in again, and add some ginger, prepared as in the above recipe; boil till done; let the liquor boil after taking them out, until it is reduced to a syrup.

How to Preserve Pineapple.—Choose ripe but sound ones, and cut them in slices about an inch in thickness, and cut off the rind. Weigh the slices, and to every two pounds of fruit put one pound and three-quarters of sifted white sugar. Boil them together in a preserving pan for thirty minutes, and if the slices are tender, take them out carefully with a wooden spoon, and place them on a wooden dish; boil the syrup for a short time longer, and then pour it over the slices of pineapple. This process must be repeated for three successive days, after which the preserves may be put into jars and covered.

How to Preserve Purple Plums.—Make a syrup of clean brown sugar; clarify it as directed in these recipes; when perfectly clear and boiling hot, pour it over the plums, having picked out all unsound ones and stems; let them remain in the syrup two days, then drain it off; make it boiling hot, skim it, and pour it over again; let them remain another day or two, then put them in a preserving kettle over the fire, and simmer gently until the syrup is reduced, and thick or rich. One pound of sugar for each pound of plums. Small damsons are very fine, preserved as cherries or any other ripe fruit; clarify the syrup, and when boiling hot put in the plums; let them boil very gently until they are cooked, and the syrup rich. Put them in pots or jars; the next day secure as directed.

How to Preserve Peaches.—Take the peaches when ripe, pare them, and if you desire to preserve them whole, throw them into cold water as you pare them, so as to prevent them losing colour. When you have everything ready, place the peaches in a can, adding as much sugar to each layer as will make them palatable. Then set the can in a vessel containing hot water, and allow it to remain in boiling water until the fruit becomes heated through. This will require, if a quart can be used, from twenty to thirty minutes. When heated sufficiently, seal at once by heating the cover and pressing it at once firmly into place, and allowing a weight sufficient to keep down the cover to remain upon it until the cement hardens. The proper temperature of the lid is easily and conveniently ascertained by putting a piece of resin, about the size of a small pea, on the cover when it is put on the stove; as soon as the resin melts, the cover is ready to put in place. This precaution is necessary, as the solder with which the parts of the lid are joined together easily melts. It is not absolutely necessary to use sugar in this process, but as it assists in the preservation of the fruit, they can be sealed at a lower temperature than if not used. As sugar is used to render the fruits palatable, there can be no objection to using it when preparing the fruit for family use, as it will, in any case, be necessary, and there is no reason why the sugar should not be used before the can is sealed. If soft peaches are preferred, they should be cut up as if intended to be eaten with cream, and must not be placed in water. When ready, they should be put in cans, and heated as described above. It is not necessary to heat them in the can, but a larger quantity may be more conveniently heated together, and put into the cans or jars while hot and sealed. A flat stewpan, lined with porcelain, will be found well adapted to this purpose. It must not, of course, be placed directly over the fire, but in a vessel of water which is set directly on the fire. By this means soft peaches may readily and certainly be preserved for winter use in such condition as scarcely to differ at all from the fresh peach. A most delicious dessert may thus be secured much more readily and at less expense, and much more palatable than the ordinary preserve. This method of preserving fresh peaches has been fully tested, and may be relied upon.

Quinces, Preserved, Whole or Half.—Into two quarts of boiling water, put a quantity of the fairest golden pippins, in slices not very thin, and not pared, but wiped clean. Boil them very quickly, close covered, till the water becomes a thick jelly; then scald the quinces. To every pint of pippin jelly, put one pound of the finest sugar; boil it and skim it clear. Put those quinces that are to be done whole into the syrup at once, and let it boil very fast: and those that are to be in halves by themselves; skim it, and when the fruit is clear, put some of the syrup into a glass to try whether it jellies, before taking it off the fire.

Rhubarb, Preserved.—Cut without peeling or splitting, six pounds of ordinary sized rhubarb into pieces about an inch long; put it in with the rind of a lemon, into the stewpan, in which must be about a tablespoonful of water to keep it from burning; let it boil till tender, then, with a strainer, take out the fruit, and add to the juice five pounds of sugar; boil this forty minutes, then again put in the fruit and boil ten minutes. This is a delicious preserve.

Raspberries, Preserved.—These may be preserved wet, bottled, or made jam or marmalade of, the same as strawberries. Raspberries are very good dried in the sun or in a warm oven. They are very delicious stewed for table or tarts.

Strawberries, Preserved.—Use ripe strawberries, but not soft. Make a syrup of one pound of sugar to a pound of berries. Sugar should be double-refined (though refined sugar will answer), as it makes the preserves have more brilliant colour than simply refined sugar. To each pound of sugar put a teacup of water; set it over a gentle fire, and stir it until totally dissolved. When boiling hot, put in the fruit, having picked off every hull and imperfect berry; then boil very gently in a covered kettle, until, by cutting one open, you find it cooked through; that will be known by it having the same colour throughout. Take them from the syrup with a skimmer, and spread them on flat dishes, and let them remain till cold; boil the syrup until quite thick; then let it cool and settle; put the fruit into jars or pots, and strain or pour the syrup carefully over, leaving the sediment which will be at the bottom of the pitcher. The next day, cover with several papers wet with sugar boiled to candy; set them in a cool, airy place. Strawberries keep perfectly well made with seven pounds of sugar to ten of fruit. They should be done as directed above, and the syrup cooked quite thick. A pint of red currant juice and a pound of sugar for it to three pounds of strawberries, make the syrup very beautiful.

Tomatoes, Preserved.—Scald the tomatoes, take off the skins. Weigh the tomatoes, which must be full grown and ripe. Allow to every two pounds of the best brown sugar, a large spoonful of ground ginger, and the juice and rind of one large lemon. Mix the tomatoes and sugar and white of one egg together, and put in a porcelain kettle. Boil slowly till the scum ceases to appear; then add gradually the juice and grated rind of the lemons, and boil slowly for an hour or more. The tomatoes must all have burst by this time. When done take them off, and when cool put them in jars.

Walnuts, Preserved.—Pierce your nuts several times with a fork, and boil them in water until they begin to be tender; take them out of the water, and when cold, make a hole through every one with a pretty large bodkin, and introduce a piece of candied lemon or citron. Make a syrup of brown sugar and a little water (the sugar to the weight of your nuts), and boil your nuts well until the sugar has penetrated to the centre; then put them into preserving pots, filling them with a thick syrup, and tie them up like jellies.

Peaches Canned by the Cold Process.—Pare and halve the peaches. Pack them as closely as possible in a can without any sugar. When the can is full, pour in sufficient cold water to fill all the crevices between the peaches, and reach the top of the can. Let it stand long enough for the water to soak into all the crevices—say five hours—then pour in water to replace what has sunk away. Seal up the can, and all is done. Peaches preserved in this way retain all their freshness and flavour. There will not be enough water in them to render them insipid. If preferred, a cold syrup could be used instead of pure water, but the peaches taste most natural without any sweetening.

Fruit, in Brandy.—Gather your fruit before it is quite ripe; prick them with a pin on each side; put them into a stewpan of fresh spring water, and stew them gently until you can pass a pin with facility to the stone of the fruit, when take them from the pan and put them to drain on a sieve. Whilst draining, prepare a syrup, which, when the fruit is nicely arranged in a tureen, should be thrown on it boiling hot, and so left for twenty-four hours, when the fruit is again put to a drain, and the syrup boiled for one hour, and poured boiling hot all over the fruit once more. On the third day arrange the fruit in the preserving pots, and boil the syrup to a proper consistency; when cool mix it with brandy, in the proportion of two-thirds syrup to one-third brandy, and pour it over the fruit.

How to Bottle Fruit.—Cherries, strawberries, sliced pineapples, plums, apricots, gooseberries, etc., may be preserved in the following manner, to be used as fresh fruit: Gather the fruit before it is very ripe; put it in wide-mouthed bottles made for the purpose; fill them as full as they will hold and cork them tight; seal the corks; put some hay in a large saucepan; set in the bottles with hay between them to prevent their touching; then fill the saucepan with water to the necks of the bottles, and set it on the fire until the water is nearly boiling, then take it off; let it stand until the bottles are cold; then keep them in a cool place until wanted, when the fruit will be found equal to fresh.

How to Keep Fruit Fresh in Jars.—We advise the use of self-sealing glass jars. Put the fruit in a porcelain-lined preserving kettle, sufficient to fill four quart jars; sprinkle on sugar, one half pound, place over a slow fire and heat through, not boiled. While the fruit is being heated, keep the jars filled with moderately hot water. As soon as the fruit is ready, empty the water from the jars, fill to the brim with fruit, and seal immediately. As it cools a vacuum is formed which prevents bursting. In this way every kind of fruit will retain its flavour. Sometimes a thick, leathery mould forms on the top—if so all the better. The plan of keeping the jars full of hot water is merely to prevent the danger of cracking when the hot fruit is inserted. Some prefer to set the bottles full of cool water in a boiler of water, and heating all together gradually; but the other way is much simpler and equally effective.

Jam.—Let the jam be drawn on a dry day; wipe the fruit clean, but do not wash it; peel off the skin and coarse fibres, and slice the fruit thin. To each pound thus prepared allow a pound of fine sugar in fine powder; put the fruit in a pan, and stew a quarter of the sugar amongst it and over it; let it stand until the sugar is dissolved, when boil it slowly to a smooth pulp; take it from the fire, and stir in the remainder of the sugar by degrees; when it is dissolved, boil the preserve quickly until it becomes very thick, and leaves the bottom of the pan visible when stirred. The time required for preserving this preserve will depend on the kind of fruit used, and the time of year it is made. It will vary from an hour to two hours and a quarter. The juice should be slowly drawn from it first.

How to Put up Jam while Hot.—It is said that ordinary jam—fruit and sugar which have been boiled together some time—keeps better if the pots into which it is put are tied up while hot. If the paper can act as a strainer, in the same way as cotton wool, it must be as people suppose. If one pot of jam be allowed to cool before it is tied down, little germs will fall upon it from the air, and they will retain their vitality, because they fall upon a cool substance; they will be shut in by the paper and will soon fall to work decomposing the fruit. If another pot, perfectly similar, be filled with a boiling-hot mixture, and immediately covered over, though, of course, some of the outside air must be shut in, and germs which are floating in it will be scalded, and in all probability destroyed, so that no decomposition can take place.

HOW TO ADVERTISE:

EMBRACING RULES, SUGGESTIONS, AND PRACTICAL HINTS FOR BUSINESS MEN ON THIS IMPORTANT SUBJECT.

Volumes might be written on the necessity of, and the various methods employed for, advertising. Many prosperous men owe their success in life to judicious and liberal advertising. In this age of strong competition in the various avenues of trade, he who does not advertise his wares will probably be outdone by a more ambitious dealer, with perhaps a poorer article, who advertises liberally. People go where they are invited, and the merchant who advertises freely, places his shop and windows in attractive order, and leaves the door open, will do far more business than he who does not cater to the public, is indifferent about appearances, gruff, and complaining of hard times.

P. T. Barnum laid it down as a rule that a merchant should advertise equal to his rent. This, like all good rules, ought to have exceptions. An old and well established business would not require so much, while a new enterprise would require more than this amount expended judiciously in advertising. The merchant should decide at the beginning of the year about what amount he may expend in advertising during the year, and then endeavour to place that amount in the best possible manner before the public.

An advertiser should not be discouraged too soon. Returns are often slow and inadequate. Time is required to familiarise the public with a new article or new name. Some men have given up in despair, when just on the eve of reaping a harvest of success by this means. Many of the most prosperous and wealthy business men in this country have at times been driven hard to meet their advertising bills, but they knew that this was their most productive outlay, and by persistently continuing it they weathered the storm.

NEWSPAPER ADVERTISING.

Select the newspaper which circulates among the class of persons desired to reach. Do not advertise a special article or business, designed for a limited class of customers, in a general newspaper. Almost all trades and occupations in these latter days have their special journals, and these afford the best means of reaching that class of persons. The purpose of the advertiser then should be to discover, first, the character of a paper's circulation, and second, the extent of its circulation. On these two essentials may then be based an estimate of its value as an advertising medium. The character of a paper's circulation is easily determined by the quality of the reading matter which the paper contains, and the general tone imparted to it by its conductors. The extent of a paper's circulation bears chiefly on the rates of advertising, which, other things being equal, should have a direct ratio to it. The extent of circulation is a matter of almost constant misrepresentation on the part of publishers or their agents.

As a rule, the most prominent and costly part of the paper is the best. In country weeklies the "local items," or next to them, is preferable. In metropolitan journals containing a large amount of reading matter, a well-displayed advertisement on the outside pages is perhaps the best for most classes of business.

Place the advertisement before the public at the proper time, just when people are beginning to feel the need of such as the article advertised, as furs, when winter sets in. An advertisement may, however, profitably be kept before the public constantly, and increased or diminished as occasion requires.

CIRCULARS.

There are many well-established firms who will not advertise in the newspapers at all. They believe that the same amount of money spent in circulars, catalogues, etc., sent direct to the persons whom they desire to reach, pays better than newspaper advertising. This is more direct, and affords the advertiser the opportunity of setting forth his claims more fully. Circulars, cards, catalogues, etc., also afford a means for the display of taste in their typographical arrangement and appearance, and oftentimes this has as much to do in making an impression on the person who receives it, as the reading matter contained therein. The printed circular goes out to the public as the representative of the house; it should, therefore, in order to command attention and respect, have about it an air of appropriateness and attraction. Such a circular will perhaps be carefully preserved for years, while another, which was of not enough importance, apparently, to the proprietor or firm issuing it, to command their taste and skill, will soon be thrown aside as of no importance to the person receiving it.

Several circulars must often be sent in order to command the attention and secure the custom of a person. Where circulars referring to the same article are repeatedly sent out, the attention of the person who receives them is likely to be arrested at last, and his response may be made in the form of an order.

Perhaps thereafter he becomes a constant customer, buying himself, and recommending his friends to do likewise.

CHARTS, CALENDARS, ETC.

An important idea in advertising is to enlist the services of others, by making it to their interest to advertise your business. This is often done by sending out charts, calendars, etc., containing useful information, together with the advertisement. These, when properly arranged and prepared in an attractive manner, will be placed in a conspicuous place in the shop, office, or home of the person receiving them. Railway, insurance, and other corporations have vied with each other in the elegance and attractiveness of their charts, etc., until they have gone into the fine arts, and spared no expense to captivate the public.

LETTERS.

More effectual than circulars, and nearest a personal interview, is a personal letter. As an advertisement the letter impresses itself upon the mind of the person receiving it, in an unusual way. A prominent firm employed clerks, and had written several thousand letters, at many times the cost of printed circulars, which they mailed throughout the country, calling especial attention to their line of goods. The envelope being sealed, impresses the person receiving it with the thought that it is of importance, and one of the largest houses in London, when issuing any circular which they regard as special, seal the envelope. They consider that this gives their circulars a preference over ordinary printed matter. Certain it is, that the public accept advertisements largely at the value and importance attached to them by their owners.

TRAVELLERS AND AGENTS.

Personal effort exceeds all other means of advertising, and competition in many branches of business has become so strong in these times, and the facilities for travel so excellent, that large numbers of solicitors and agents traverse the country. Good personal address, a thorough understanding of the business, a knowledge of human nature, together with social qualities, constitute a good traveller.

HOW TO WRITE AN ADVERTISEMENT.

Before writing an advertisement, one should always place before his mind what is the most important thing to impress upon the public. If he is advertising an article of established trade, it is the name and location of the house selling it which must be the more prominent, or at least equally so with any other part; but if he be introducing some new article, or seeking to extend the sale of something little known or rare, these items are of far less importance, and the name of the article itself should be more prominent. The advertisement should be so constructed as to claim the attention of the reader, and retain that attention until he has read it through. "Excite, but never satisfy," is the principle pursued by many successful advertisers.

The advertisement should never contain anything repugnant to refined taste, and nothing grotesque or ridiculous. The most meaning should be condensed into the fewest possible words. The wording should often be changed, and an attractive typography should be used. It is well to choose an attractive heading, followed by fairly spaced paragraphs, with appropriate sub-heads.

THE SEVEN WONDERS OF THE WORLD.

The Seven Wonders of the World in ancient times, reckoned to be—1. The Pharos. 2. Statue of Jupiter. 3. Colossus of Rhodes. 4. Temple of Diana. 5. The Mausoleum of Artemisia. 6. The Pyramids of Egypt. 7. The Hanging Gardens of Babylon. The following is the generally accepted history of the Seven Wonders of the World:—

1. Pharos was the ancient name of a small island off the coast of Egypt, not far from the ancient city of Alexandria, and connected with the mainland by a mole. It was famous for its lighthouse. The building was the frustrum of a square pyramid surrounded by a large base, the precise dimensions of which are not known. It was commenced by the first Ptolemy, and was finished about 280 years before Christ. The style and workmanship are represented to have been superb, and the material was of white marble. It is stated by Josephus that the light which was always kept burning on its top at night was visible forty-one miles. This great lighthouse was probably destroyed by an earthquake, but nothing is known of the date of its destruction. The tower existed 1600 years.

2. The colossal Statue of Jupiter in the temple of Olympia at Elis, was by the Greek Phidias. It was in gold and ivory, and sat enthroned in the temple 800 years, and was finally destroyed by fire about A.D. 475. An imitation of the head is preserved in the British Museum and that is all that remains to us of that prodigy of art. Mr. Frothingham, speaking of the artist Phidias, says: "He was a man of lofty soul, majestic intellect, consummate knowledge of the principles of his art, and wonderful skill in design."

3. The Colossus of Rhodes. The city of Rhodes was besieged by Demetrius Poliorcetes, King of Macedon; but, aided by Ptolemy Soter, King of Egypt, the enemy was repulsed. To express their gratitute to their allies and to their tutelary deity, they erected a brazen statue to Apollo. It was 105 feet high, and hollow, with a winding staircase that ascended to the head; after standing fifty-six years it was overthrown by an earthquake, 224 years before Christ, and lay nine centuries on the ground, and then was sold to a Jew by the Saracens, who had captured Rhodes about the middle of the seventh century. It is said to have required 900 camels to remove the metal, and from this statement it has been calculated its weight was 720,000 lbs. The execution of this stupendous work of art is attributed to Charus of Lindus.

4. The Temple of Diana at Ephesus was built at the common charge of all the Asiatic States. The chief architect was Chersiphon. Pliny says that 220 years were employed in completing the temple, whose riches were immense. It was 425 feet long, 225 broad, and was supported by 127 columns of Parian marble (sixty feet high, each weighing 150 tons) furnished by as many kings.' It was set on fire, on the night of Alexander's birth, by an obscure person named Erostratus, who confessed on the rack that the sole motive which prompted him was the desire to transmit his name to future ages. The temple was again built, and was once more burned by the Goths in their naval invasion, A.D. 256.

5. The Mausoleum at Halicarnassus. This magnificent structure was erected by Artemisia, who was the sister, wife and successor of Mausolus king of Caria, 353 B.C. It was a rectangular building surrounded by an Ionic portico of thirty-six columns, and surmounted by a pyramid rising in twenty-four steps, upon the summit of which was a colossal marble quadriga with a statue of Mausolus. This statue is now in the British Museum. It was probably overthrown between the 12th and 14th centuries.

6. The Pyramids were some 70 in number. Seven of these are at Gizeh, five at Abusir, eleven at Sakkara, five at Dashur, and the remainder scattered throughout Egypt. They were constructed of blocks of red or syenitic granite, and of a hard calcareous stone. These blocks were of extraordinary dimensions, and their transportation to the sites of the pyramids and their adjustment in their places, indicate a surprising degree of mechanical skill. An eminent Egyptologist describes as follows the method of pyramid building: "First the nucleus was formed by the erection of a small pyramid upon the soil of the desert. It was built in steps, and contained a stone chamber, well constructed and finished. Then coverings were added until the final size was reached, and at last all was inclosed in a casing of hard stone, deftly fitted together and polished to a glassy surface. The pyramid, thus finished, presented a gigantic triangle on each of its four sides. The stone used for the inner structure was found near the place of erection, but as the work progressed, better material was brought from the mountain quarries as far up the Nile as the modern Assouan." The granite last referred to was as hard as metal, and susceptible of an exquisite polish. The date of the construction of the Great Pyramid is a subject of conjecture, and authorities widely differ in their conclusions. It is supposed that it was erected as a Mausoleum for Cheops of the fourth Egyptian Dynasty, who reigned about 3800 B.C. It is 746 feet square at its base, 450 feet 9 inches high. The interior contains what is called the King's Chamber and the Queen's Chamber, in which sarcophagi the bodies of the sovereign and his queen were found, and numerous small chambers.

7. The Hanging Gardens of Babylon. The famous hanging gardens were built, according to some writers, by Nebuchadnezzar to gratify his wife Amytis, a native of Media, who longed for something in that flat country to remind her of her mountain home. These gardens consisted of an artificial hill 400 feet on each side, rising by successive terraces to a height which overtopped the walls of the city. The terraces themselves were formed of a succession of piers, the tops of which were covered by flat stones sixteen feet long and four feet wide. Upon these were spread beds of matting, then a thick layer of bitumen covered with sheets of lead. Upon this solid pavement earth was heaped, some of the piles being hollow, so as to afford depth for the roots of the largest trees. Water was drawn from the river Euphrates to irrigate these gardens (this was contained in a large reservoir at the summit). The whole thus appeared like a pyramidal hill covered with verdure.

A
COMPLETE ATLAS
OF
THE WORLD.

ILLUSTRATED.

THE LOST AND RUINED CITIES OF THE WORLD;

WITH

BRIEF HISTORIC DATA OF THEIR RISE AND FALL.

Collated Expressly for "Ogilvie's Encyclopædia."

There are a number of ruins in India and America, supposed to be the remains of ancient cities, of which there are no accurate data extant.

The cities designated by asterisks (*) were afterwards rebuilt under the same name.

Cities.	Founded.		Destroyed.		
	By whom.	Date.	How.	By whom.	Date
Abydos, in Asia Minor, on the Hellespont; burned by Darius; conquered by Philip I.; by the Romans 188 B.C.	Milesians	715 B.C.	War	Turks	1330 A.D.
Aegina,* on the island of the same name, Greece; subjected by Phidon 748 B.C.; captured by the Athenians 455 B.C.; by Publius Sulpicius 210 B.C.	Dorians	. . .	War	Turks	1536 A.D.
Agrigentum, in Sicily, subjected by Phalaris 570 B.C.; destroyed by Carthaginians 406 B.C.; captured by Romans 262 B.C.; again destroyed by Carthaginians 255 B.C.	Colony from Gela	582 B.C.	War	Carthaginians	406 and 205 B.C.
Alexandria,* in Egypt, scene of a frightful massacre by Ptolemy Physcon 141 B.C.; captured by Julius Cæsar 48 B.C.; 50,000 persons killed by earthquake 365 A.D.; captured by Chosroes II. 616 A.D.; by Amrou 640 A.D.; destroyed by the Turks 868 A.D.	Alexander the Great	332 B.C.	War	Turks	868 A.D.
Antioch,* in Syria; conquered by Pompey 64 B.C.; destroyed by Chosroes I. 541 A.D.; captured by Chosroes II. 611 A.D.; Saracens 638 A.D.; Turks 1084 A.D.; Crusaders 1098 A.D.; destroyed by Bibars, Sultan of Egypt, 1268 A.D.	Seleucus Nicator	300 B.C.	War	Chosroes I. an Bibars	541 and 1268 A.D.
Argos,* in Greece, under Phidon about 750 B.C. leading state of the Peloponnesus; lost Cynuria in wars with Sparta 550 B.C.; fell into decay after defeat near Tiryns 524 B.C.	Inachus	1856 B.C.	War and Decay	. . .	524 B.C.
Arsinoe, in Egypt, not far from Lake Moeris; received its name from Ptolemy Philadelphus in honour of his sister Arsinoë, originally called Crocodipolis by the Greeks; the ruins are near Medinet-el-Fayoom	Pharaoh in the 12th Dynasty of Manetho	2300 B.C.	Decay	. . .	. .
Athens,* in Greece; captured by Xerxes 480 B.C.; burnt by Mardonius 479 B.C.; rebuilt by Themistocles 478 B.C.; 439 B.C. at the height of its prosperity; taken by Lysander 404 B.C.; walls rebuilt by Conon 393 B.C.; submits to Alexander the Great 335 B.C.: conquered by Cassander; surrendered to Antigonus Gonatas 200 B.C.; partly destroyed by Philip of Macedon 200 B.C.; subdued by the Romans 146 B.C.; walls and fortifications destroyed by Sulla 86 B.C.	Cecrops	1558 B.C.	War	Sulla	86 B.C.
Baalbec,* or Heliopolis, in Asia Minor; sacked by the Moslems 748 A.D.; by Timour Beg 1400 A.D.	. . .	. .	War	Timour Beg	1400 A.D

Cities.	Founded.		Destroyed.		
	By whom.	Date.	How.	By whom.	Date.
BABYLON, in Asia; captured by Tiglath-Pileser I. 1110 B.C.; by Cyrus 538 B.C.; walls destroyed by Darius 537 B.C.; taken by Alexander III. 331 B.C.; by Seleucus Nicator 312 B.C., who destroyed Babylon to build Seleucia. Explored by Rich, Kerr, Porter, Layard, Fraser, Chesney, Botta, Loftus, and Rawlinson	Nimrod	2247 B.C.	War	Seleucus Nicator	312 B.C.
BYZANTIUM, in ancient Thracia (modern Turkey); captured successively by the Medes, Athenians, and Spartans; by the Romans 73 A.D.; destroyed by Severus 196 A.D. It was refounded 324 A.D., and called Constantinople	Megarius under Byzas.	667 B.C.	War	Severus	196 A.D.
CARTHAGE, a city in Africa; captured by Scipio after the battle of Zana 201 B.C.; burned by the Romans 146 B.C.; rebuilt as a Roman colony 123 B.C.; captured by Genseric 439 A.D.; by Belisarius 533 A.D.; sacked by the Arabs 647 A.D.; destroyed by Hassan 698 A.D.	Dido	878 B.C.	War	Romans and Hassan	146 B.C. and 698 A.D.
CORINTH, in Greece; captured by the Dorians 1074 B.C.; by the Macedonians 338 B.C.; by Aratus 243 B.C.; Antigonus Doson 223 B.C.; destroyed by L. Mummius 146 B.C.; rebuilt by Julius Cæsar 46 B.C.; sacked by Alaric 396 A.D.	Phœnicians	1520 B.C.	War	L. Mummius and Alaric	146 B.C. and 396 A.D.
CTESIPHON, in Assyria; captured by Trajan 116 A.D.; by Severus 198 A.D.; destroyed by Omar 637 A.D.	. . .	. .	War	Omar	637 A.D.
DELPHI, in Greece; temple burned 548 B.C., and rebuilt by the Alcmæonidæ; plundered by the Phocians 357 B.C.; by Sulla 82 B.C.; by Nero 67 A.D.; temple suppressed by Theodosius I.	Amphictyons.	1263 B.C.	War and Decay	. . .	395 A.D.
EPHESUS, in Asia Minor; burned by the Amazons 1141 B.C.; rebuilt by the Ionians 1045 B.C.; captured by Crœsus 559 B.C.; by Cyrus 554 B.C.; destroyed by an inundation 322 B.C.; rebuilt 300 B.C.; destroyed by an earthquake 17 A.D.	. . .	. .	Inundation and Earthquake	. . .	322 B.C. and 17 A.D.
HERCULANEUM, in Italy; its foundation ascribed to Hercules; partly ruined by an earthquake 63 A.D.; completely buried by an eruption of Vesuvius 79 A.D.; a second settlement buried by Vesuvius 472 A.D. Fragments of statues were discovered 1709 A.D.; theatre discovered 1738 A.D.	Hercules	. .	Vesuvius	. . .	79 and 472 A.D.
JERUSALEM,* in Palestine; captured by David 1049 B.C.; sacked by the Philistines and Arabs 887 B.C.; by Nebuchadnezzar 586 B.C.; by Antiochus Epiphanes 170 B.C.; captured by Pompey 63 B.C.; by Herod 37 B.C.; destroyed by Titus 70 A.D.	. . .	About 1913 B.C.	War	Titus	70 A.D.
MEMPHIS, in Egypt; partly destroyed by the Persians 525 B.C.; captured by Antiochus Epiphanes 171 B.C.; restored by Septimus Severus 202 A.D.; decayed under the Arabs in the 7th century, and Cairo built from its ruins	Menes or Misraim	3890 B.C. or 2188 B.C.	War and Decay	. . .	600 to 700 A.D.
MYCENÆ, in Greece; destroyed by the Argives 468 B.C.; explored by Dr. Schliemann, who discovered tombs with immense treasures 1877 A.D.	Perseus	1431, 1313, or 1282 B.C.	. . .	Argives.	468 B.C.
NINEVEH, in Assyria; received its name from Ninus 2182 B.C.; destroyed by Cyaxares and Nabopolassar from 625 to 606 B.C. Layard began exploring the ruins 1840 A.D.	Ashur	About 2245 B.C.	War	Cyaxares and Nabopolassar.	625 to 606 B.C.
NUMANTIA, in Spain, destroyed by Scipio the Younger 134 B.C.	. . .	. .	War	Scipio	134 B.C.

Cities.	Founded.		Destroyed.		
	By whom.	Date.	How.	By whom.	Date.
Palmyra, Syria; submitted to Hadrian 130 A.D.; destroyed by Aurelian 274 A.D.; restored by Justinian I. 527 A.D.; again destroyed by the Saracens 744 A.D.; ruins discovered 1691 A.D.; explored by Wood and Dawkins 1751 A.D.	Solomon	About 1001 B.C.	War	Aurelian and Saracens	274 to 744 A.D.
Persepolis, in Persia; supposed to have been founded by Jemshed; burned by Alexander III. 331 B.C.	Jemshed		War	Alexander	331 B.C.
Petra, in Arabia; captured by the Nabathæans in the 4th century B.C.; by Cornelius Palma 106 A.D.; fell into decay and is not mentioned after the 6th century A.D.; ruins discovered by Burckhardt 1812 A.D.			Decay		After 600 A.D.
Pompeii, in Italy; date of its foundation unknown; said to have been conquered by the Samnites 440 B.C.; captured by the Romans 360 B.C.; almost destroyed by an earthquake 63 A.D.; completely buried by an eruption of Vesuvius 79 A.D.; accidentally discovered 1748 A.D.; excavations commenced 1755 A.D.				Earthquake and Vesuvius.	79 A.D.
Saguntum, in Spain; said to have been founded by a colony of Greeks; burned by its citizens before surrendering to Hannibal 218 B.C.	Greeks		Fire	Citizens	218 B.C.
Samaria, in Palestine; captured by Shalmaneser IV. 721 B.C.; by Alexander III. 336-332 B.C.; destroyed by John Hyrcanus 109 B.C.	Omri	About 925 B.C.	War	John Hyrcanus	109 B.C.
Sardis, in Asia Minor; captured by the Cimmerians about 635 B.C.; by the Persians 554 B.C.; burned by the Greeks 499 B.C.; it was rebuilt; captured by Alexander III. 334 B.C.; by Seleucus I. 283 B.C.; by Antiochus 214 B.C.; by the Romans 190 B.C.; destroyed by an earthquake 14-37 A.D. under Tiberius, who rebuilt it; captured by the Turks in the 11th century; destroyed by Tamerlane 1402 A.D.			War and Earthquake	Greeks and Tamerlane	499 B.C. and 1402 A.D.
Sodom and Gomorrah, cities of Palestine; destroyed, according to the biblical account, by fire from heaven 1897 B.C.			Fire		1897 B.C.
Susa, in Persia; mentioned on monuments 660 B.C.; captured by Alexander III. 331 B.C.; by Antigonus 315 B.C.; by the Arabs 652 A.D.; after that it decayed; ruins were discovered by Williams and Loftus 1853 A.D.			Decay		After 652 A.D
Sybaris, in Greece; destroyed by the Crotoniats 510 B.C. by turning the course of the River Crathis	Archæus	720 B.C.	War	Crotoniats	510 B.C.
Thebes, or Luxor, in Egypt; flourished from 1600-800 B.C.; captured by the Persians 525 B.C.; destroyed by Ptolemy Lathyrus 86 B.C.	Menes	2717 B.C.	War	Ptolemy Lathyrus	86 B.C.
Troy, or Ilium, in Asia Minor; destroyed by the Greeks about 1184 B.C.; Dr. Schliemann discovered ruins 1872 A.D., which he considers ancient Troy			War	Greeks	1184 B.C.
Tyre, in Asia Minor; destroyed by Nebuchadnezzar 572 B.C.; rebuilt; captured by Alexander III. 332 B.C.; by Antigonus 315 B.C.; by Antiochus III. 218 B.C.; by the Crusaders 1128 A.D.; by Chalid 1291 A.D.; destroyed by the Turks 1516 A.D.		About 2750 B.C	War	Nebuchadnezzar and Turks	572 B.C. and 1516 A.D.
Veii, in Italy; destroyed by the Romans after ten years' siege 396 B.C.			War	Romans	396 A D.

THE TREATIES OF THE WORLD.

CHRONOLOGICAL LIST OF THE PRINCIPAL TREATIES RATIFIED BY VARIOUS NATIONS.

1140.—Hanseatic League projected between the port-towns and cities of Germany against Danish and Swedish pirates; signed 1241.

1217, Sept. 11th.—First treaty made by England was with the Dauphin Louis of France.

1272.—First treaty of commerce made by England with any foreign nation was with Flanders, time of Edward I.; the second with Portugal and Spain, 1308, Edward II.

1371.—Public Peace of Westphalia made between the Emperor Charles IV. and the States of the empire for maintaining the peace of Germany.

1420, May 21st.—Troyes, treaty between England, France, and Burgundy to secure to Henry V. the throne of France, after the death of Charles VI.

1508, Dec. 10th.—League of Cambray between Pope Julius II., Maximilian, Louis XII. of France, and Ferdinand of Spain against the republic of Venice.

1526, Jan. 14th.—The Madrid Concord between Charles V. and Francis I.

1530, Dec. 31st.—League of Schmalkald, entered into by the Elector of Brandenburg and the other princes of Germany as a defence against Charles V. and in favour of Protestantism.

1555, Sept. 15th.—"Peace of Religion," signed at Augsburg, between Catholics and Protestants.

1576-93.—Holy League of French Roman Catholics, formed by the Duke of Guise at Peronne as a barrier to the succession of Henry IV., who was a Protestant. Dissolved in 1593, when the king became a Roman Catholic.

1620, July 3rd.—Treaty of Ulm, between the Emperor Ferdinand II., the dukes of Bavaria, the kings of Spain and of Poland, the Elector of Saxony, the Pope, and the Roman Catholic League on one hand, and the king of Bohemia and the allied princes of the Protestant Union of Germany.

1630, Oct. 13th.—Ratisbon, peace concluded between France and Germany.

1635, Aug. 13th.—Prague, peace between Austria and Prussia.

1648, Aug. 6th.—First peace of Westphalia, concluded between Germany and Sweden; terminated the "Thirty Years' War."

1648, Oct. 24th.—Second peace of Westphalia, concluded at Münster, between Germany, France and Sweden.

1660, May 27th.—Copenhagen, peace concluded between Sweden and Denmark.

1668, Jan. 23rd.—Alliance between the States-General and England against France to protect the Spanish Netherlands; Sweden joined the league April 25th, thereafter known as the "Triple Alliance."

1668, Feb. 13th.—Lisbon, peace between Spain and Portugal. Defensive alliance with Great Britain signed at Lisbon, May 16th, 1703, and treaties of commerce, Dec. 27th, 1703, and July 3rd, 1842.

1668, May 2nd.—First peace of Aix-la-Chapelle negotiated by England, Sweden, the Netherlands, France, and Spain.

1669, May 7th.—Treaty between Portugal and Holland.

1674, Feb. 19th.—Westminster, peace concluded between England and Holland.

1683, March 31st.—Warsaw, alliance between Austria and Poland against Turkey.

1686, July 9th.—League of Augsburg, Holland, and other powers against France.

1689, May 12th.—The grand alliance between Austria and States-General; England joined it Dec. 30th, 1689, and the King of Spain and the Duke of Savoy.

1697, Sept. 20th.—Ryswick, peace concluded between England, France, Spain, and Holland; and signed by Germany, Oct. 30th, 1697.

1709, June 28th.—Alliance of Dresden between Denmark and Saxony against Sweden.

1713, April 11th.—Utrecht, peace concluded between France, Great Britain, Prussia, Portugal, Savoy, and the States-General.

1714, March 17th.—Radstadt, treaty between Louis XIV. and Charles VI. of Germany.

1716, Nov. 28th.—Second triple alliance between England, France, and Holland, signed by the Dutch at the Hague, Jan. 4th, 1717.

1718, Aug. 12th.—Quadruple alliance, concluded by Great Britain, France, and Germany; Holland acceded to it February, 1719, whence it obtained its name. The alliance signed at London, April 22nd, 1834, between England, France, Portugal, and Spain, is also known as the Quadruple Alliance.

1719, Nov. 20th.—Peace of Stockholm, between the King of Great Britain and the Queen of Sweden.

1721, Aug. 30th.—Nystadt, between Peter the Great of Russia and Sweden.

1724, March 24th.—Treaty of Stockholm, between Sweden and Russia.

1725, April 3rd.—Alliance concluded at Vienna by Germany and Spain.

1725, Sept. 3rd.—Alliance between England, France, and Prussia.

1731. March 16th.—Between Great Britain, Germany, and Holland, by which Great Britain guarantees the Pragmatic Section. Spain acceded to it in 1731, July 22nd.

1731, March 16th.—Second treaty of Vienna concluded between Great Britain, Germany, and Holland.

1738, Nov. 18th.—Third treaty of Vienna between France and Germany.

1742, June 28th.—Berlin, peace between Prussia, Poland, and Hungary.

1745, Dec. 25th.—Peace of Dresden, between Saxony, Prussia, and Hungary.

1748, Oct. 18th.—Second peace of Aix-la-Chapelle, made by Great Britain, France, Holland, Hungary, and some Italian States.

1762, May 5th.—Peace of St. Petersburg, between Russia and Prussia.

1763, Feb. 10th.—Peace of Paris; Canada ceded to England.

1763, Feb. 15th.—Hubertsburg, peace between Austria, Prussia, and Bavaria, by which the "Seven Years' War" was ended.

1768, Feb. 24th.—Warsaw, treaty entered into between Russia and Poland.

1772, August 5th.—Treaty of St. Petersburg for the partition of Poland between Russia, Prussia, and Austria.

1783, Sept. 3rd.—Peace of Versailles between England and France.

1783, Sept. 13th.—Definitive treaty of peace between Great Britain and the United States, signed at Paris.

1790, August 5th.—Preliminaries of peace between Prussia and Russia, signed at Reichenbach. In 1791 Congress convened here by the English ministry to form an alliance against Russian aggression. The treaty that laid the foundation of the grand alliance against Napoleon I. was signed here June 14th, 1813; Austria gave her adherence to it June 27th.

1793.—Alliance between Austria, Prussia, and Great Britain against France.

1795, Sept. 28th.—Triple alliance between Great Britain, Russia, and Austria, ratified at St. Petersburg.

1795, Nov. 25th.—Third treaty for the partition of Poland, concluded between Russia, Austria, and Prussia.

1799, June 22nd.—Alliance between Great Britain, Germany, Russia, Naples, Portugal, and Turkey against France.

1802, March 27th.—Peace of Amiens, entered into by Great Britain, France, Spain, and Holland.

1805, April 11th.—Alliance between Great Britain and Russia against Napoleon I.

1805, August 5th.—Combination between Great Britain, Russia, Austria, and Naples against France.

1806, August 1st.—Confederation of the Rhine. League of the Germanic States, formed by Napoleon Bonaparte.

1806, Oct. 6th.—Alliance between Great Britain, Russia, Prussia, and Saxony against France.

1807, July 7th.—Peace of Tilsit, between France and Russia.

1809, April 6th.—Alliance between England and Austria against France.

1809, Oct. 14th.—Vienna, peace between Napoleon I. and Austria.

1813, March 17th.—Alliance between Russia and Prussia.

1813, June 14th and 15th.—Reichenbach, alliance between Russia, Prussia, and England against France; alliance soon after joined by Austria.

1813, Sept. 9th.—Töplitz, treaty between Austria, Russia, and Prussia.

1813, Oct. 3rd.—Töplitz, treaty between Austria and Great Britain.

1814, Jan. 14th.—Treaty of Kiel concluded between Denmark, Sweden, and Great Britain.

1814, Dec. 24th.—Ghent, peace between Great Britain and the United States.

1815, March 25th.—Vienna, alliance concluded between Great Britain, Austria, Russia, and Prussia. March 27th.—France accedes to the alliance. May 31st.—A treaty concluded between Holland on one side, and Great Britain, Austria, Prussia, and Russia on the other. June 9th.—The general congress treaty signed.

1815, Sept. 26th.—Alliance, known as Holy Alliance, between Russia, Austria, and Prussia, ratified at Paris, joined afterwards by nearly all European powers.

1839, Nov. 16th.—Treaty of Commerce made by Great Britain with Turkey.

1845, June 25th.—Treaty of Commerce made by Great Britain with the Two Sicilies.

1846, June 12th.—Washington, treaty between Great Britain and the United States, fixing boundary of British America and United States.

1848.—Treaty of Guadaloupe-Hidalgo between Mexico and United States.

1854, May 8th.—Tripartite treaty concluded between England, France, and Turkey.

1854, June 7th.—Washington, reciprocity between England and United States, regulating trade with Canada.

1855, Nov. 21st.—Treaty between England, France, and Sweden.

1856, April.—Peace concluded between France and Russia.

1858, August 26th.—Treaty of Jeddo between Great Britain and Japan.

1859, Nov. 10th.—Zürich, peace concluded between Austria, France, and Sardinia.

1860, Jan. 23rd.—An important commercial treaty made between Great Britain and France.

1860, Nov. 14th.—Treaty between Russia and China, giving the former free trade, territories, etc.

1864, Oct. 30th.—Vienna, peace between Austria, Prussia, and Denmark.

1866, Oct. 3rd.—Vienna, peace between Austria and Italy.

1866, Oct. 21st.—Berlin, peace between Prussia and Saxony.

1871, May 8th.—Washington, treaty between England and United States, settling Alabama claims.

1871, May 10th.—Frankfort, peace between France and Germany.

1878, March 3rd.—San Stefano, peace between Russia and Turkey.

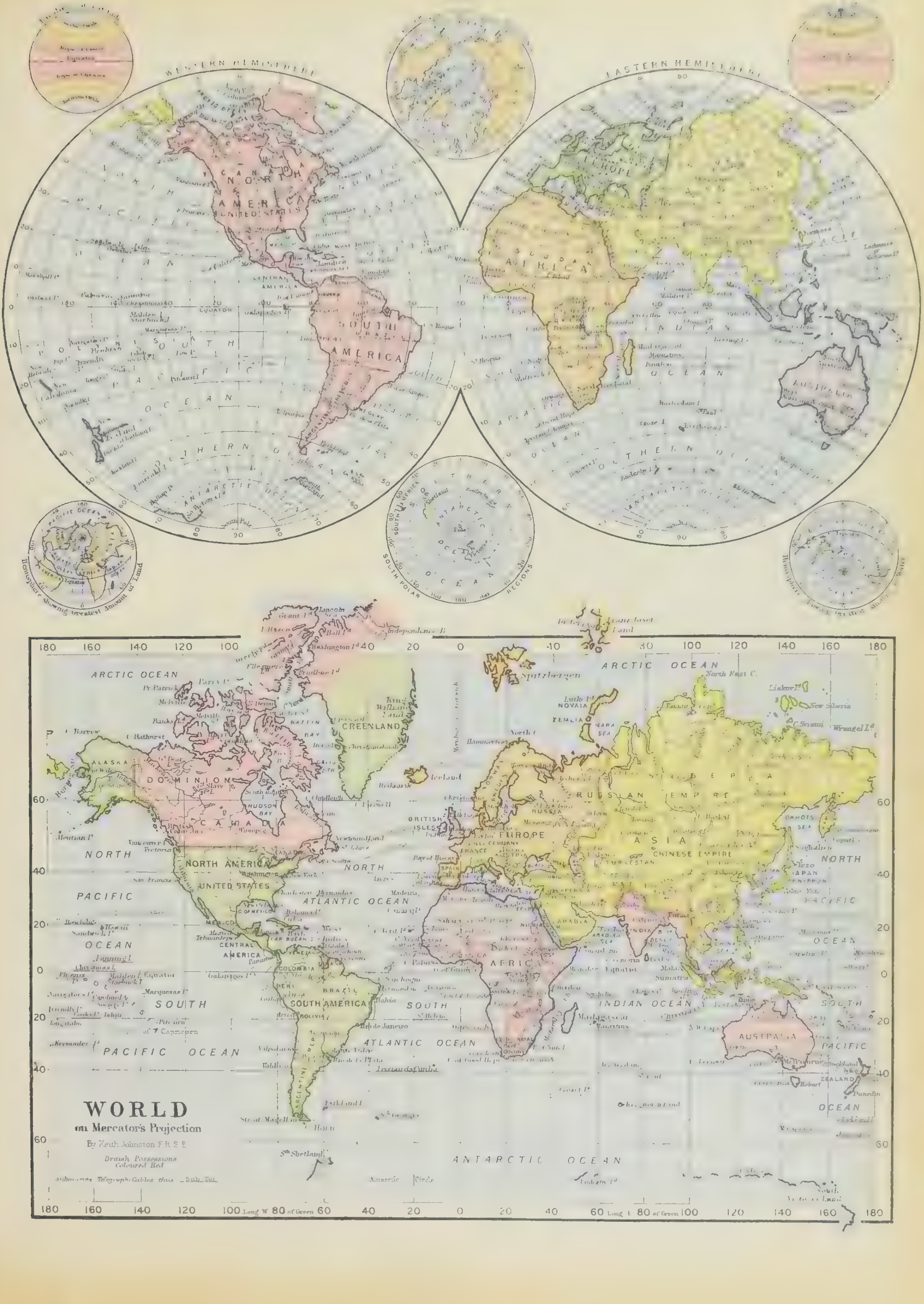
1878, July 13th.—Berlin treaty, entered into by Germany, Russia, Turkey, Great Britain, Austria, France, Italy. Ratified August 3rd, 1878.

1881.—Second treaty between United States and China.

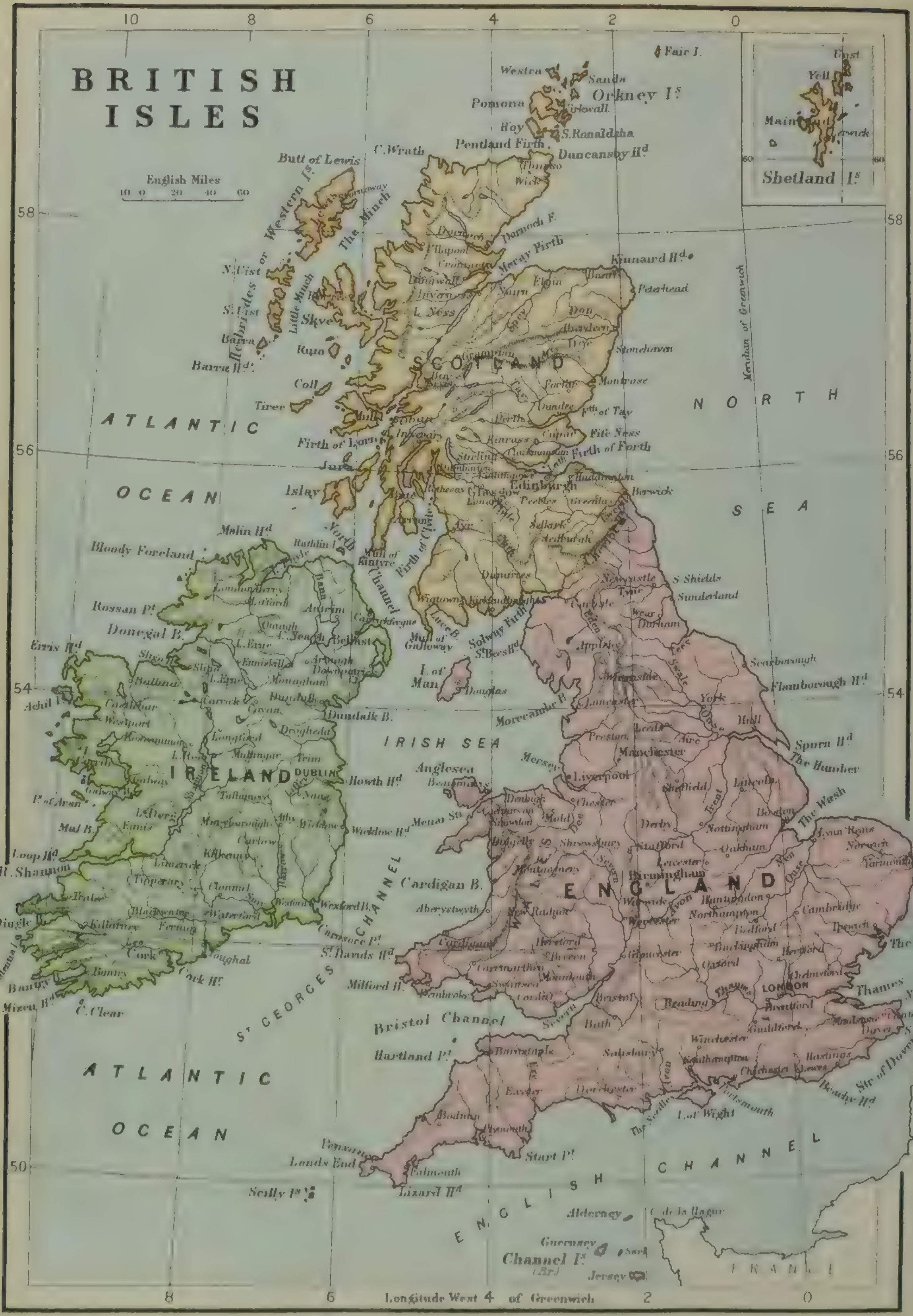
1887.—Extradition treaty between England and United States.

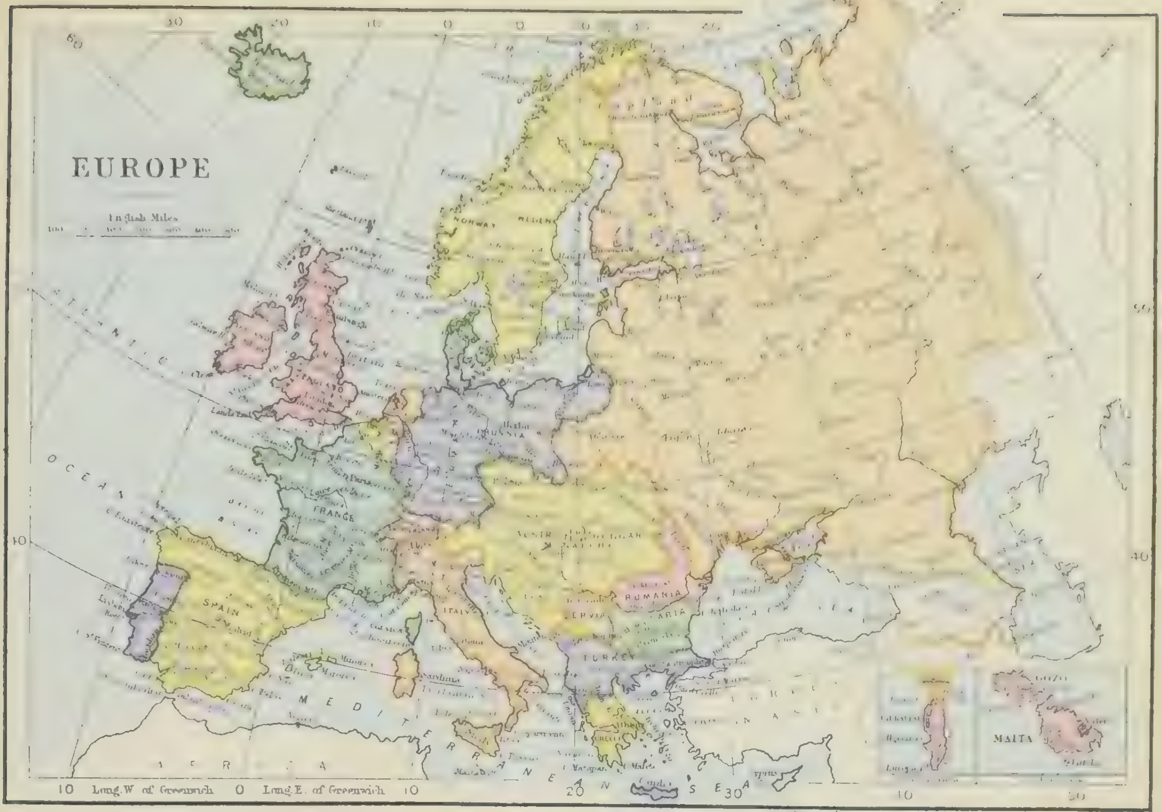
1888.—Fisheries treaty between England and United States. (The "Chamberlain-Bayard Treaty.")

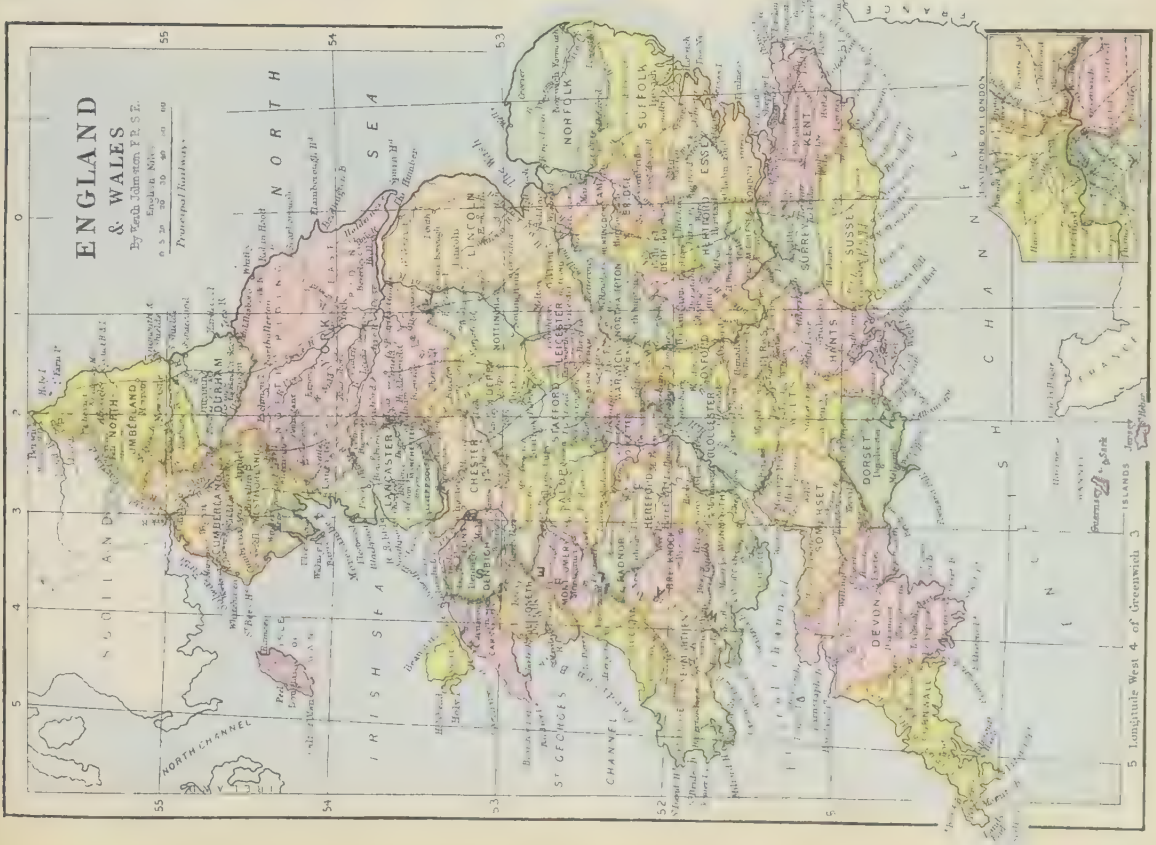
1889.—The Samoan Treaty, signed at Berlin, between Germany and the United States.

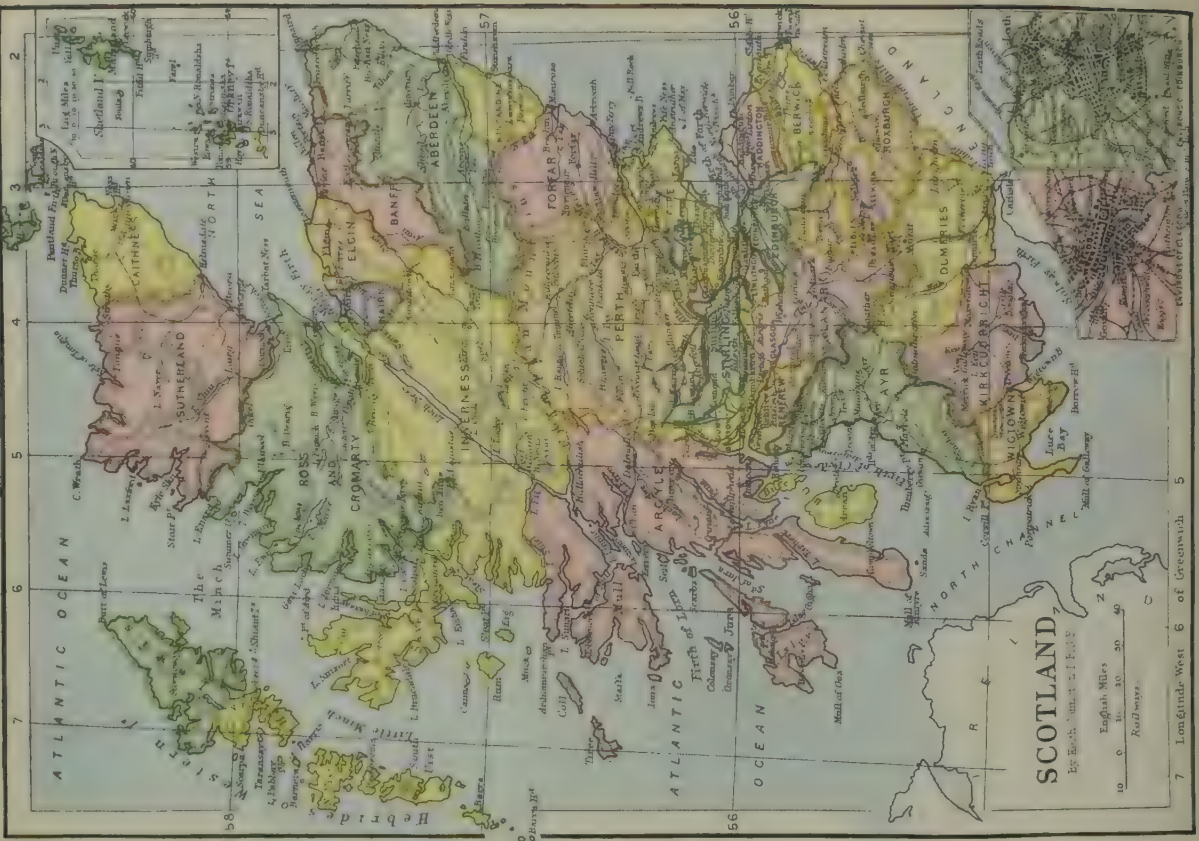


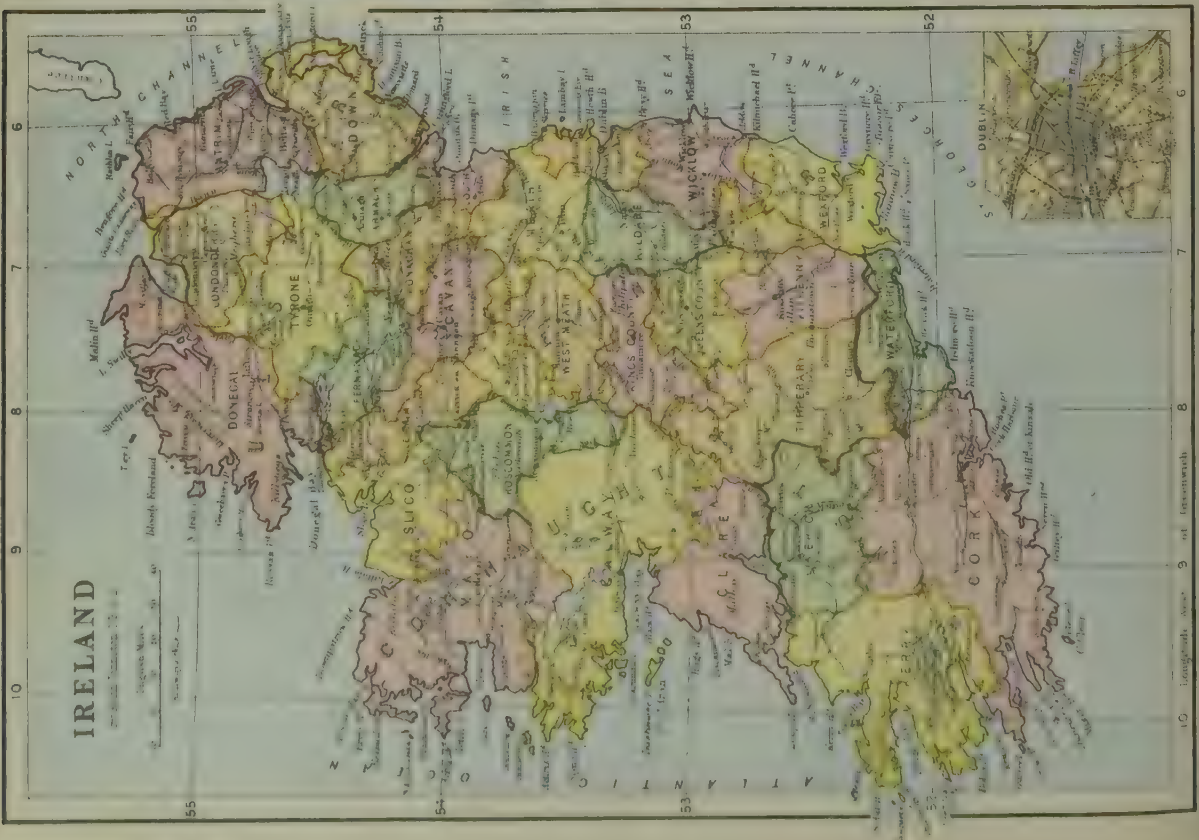
WORLD
on Mercator's Projection
By Keith Johnston F.R.S.E.
British Possessions Coloured Red
Submarine Telegraph Cables thus Sub. Tel.

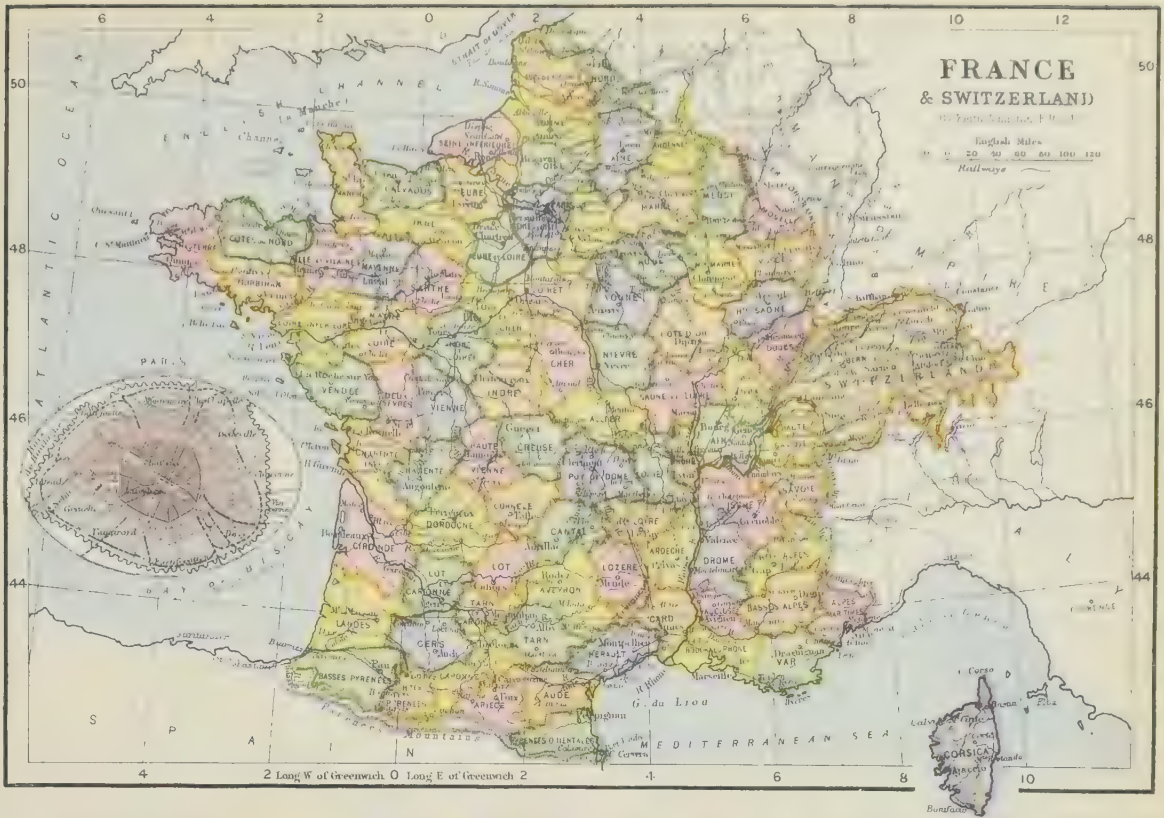

BRITISH ISLES
English Miles
10 0 20 40 60
10
8
6
4
2
0
58
56
54
50
Fair I.
Westra
Sanda
Orkney Is
Pomona
Kirkwall
Hoy
S. Ronaldsha
Pentland Firth
Duncansby Hd
Thurso
Wick
Unst
Yell
Main
Lerwick
60
Shetland Is
C. Wrath
Butt of Lewis
Stornoway
Hebrides or Western Is
The Minch
N. Uist
S. Uist
Little Minch
Skye
Barra
Barra Hd
Rum
Coll
Tiree
Mull
Oban
Inverary
Firth of Lorn
Jura
Islay
Bute
Arran
Dornoch
Dornoch F.
Ullapool
Cromarty
Moray Firth
Dingwall
Inverness
Nairn
Elgin
L. Ness
Kinnaird Hd
Banff
Peterhead
Spey
Don
Aberdeen
Dee
Grampian Mts
Stonehaven
SCOTLAND
Forfar
Montrose
Tay
Dundee
Fth of Tay
Perth
Kinross
Cupar
Fife Ness
Stirling
Clackmannan
Firth of Forth
Dumbarton
Linlithgow
Haddington
Edinburgh
Berwick
Glasgow
Rothesay
Lanark
Peebles
Greenlaw
Clyde
Tweed
Selkirk
Jedburgh
Ayr
Firth of Clyde
Dumfries
Wigtown
Kirkcudbright
Mull of Kintyre
Mull of Galloway
Luce B.
Solway Firth
North Channel
ATLANTIC
OCEAN
NORTH
SEA
Meridian of Greenwich
Malin Hd
Rathlin I.
Bloody Foreland
L. Foyle
Londonderry
Lifford
Bann
Antrim
Carrickfergus
Rossan Pt
Donegal B.
Omagh
L. Neagh
Belfast
L. Erne
Erris Hd
Sligo
Enniskillen
Armagh
Downpatrick
Ballina
Monaghan
Achil I.
Castlebar
Carrick
Cavan
Dundalk
Westport
Dundalk B.
Roscommon
Longford
Drogheda
Mullingar
Trim
Galway
IRELAND
DUBLIN
Howth Hd
Shannon
Tullamore
Naas
Pt of Aran
L. Derg
Maryborough
Athy
Wicklow
Wicklow Hd
Mal B.
Ennis
Carlow
Kilkenny
Loop Hd
R. Shannon
Limerick
Barrow
Tipperary
Clonmel
Suir
Wexford
Wexford B.
Tralee
Dingle
Killarney
Blackwater
Fermoy
Waterford
Carnsore Pt
Valentia I.
Lee
Cork
Youghal
Bantry
Cork Hr
Bantry B.
Mizen Hd
C. Clear
IRISH SEA
Anglesea
Beaumaris
Menai St
Carnarvon
Denbigh
Mold
Dee
Chester
Dolgelly
Shrewsbury
Montgomery
Cardigan B.
Aberystwyth
New Radnor
WALES
St. Davids Hd
Milford H.
Pembroke
Cardigan
Carmarthen
Brecon
Hereford
Swansea
Cardiff
Monmouth
ST. GEORGES CHANNEL
Bristol Channel
Hartland Pt
Barnstaple
Exeter
Bodmin
Plymouth
Penzance
Lands End
Falmouth
Lizard Hd
Start Pt
Scilly Is
ATLANTIC
OCEAN
I. of Man
Douglas
S. Bees Hd
Morecambe B.
Newcastle
Tyne
S. Shields
Sunderland
Carlisle
Eden
Wear
Durham
Appleby
Tees
Swale
Scarborough
Flamborough Hd
Lancaster
York
Ouse
Hull
Spurn Hd
The Humber
Preston
Leeds
Aire
Manchester
Mersey
Liverpool
Sheffield
Lincoln
Trent
The Wash
Boston
Derby
Nottingham
Stafford
Oakham
Lynn Regis
Norwich
Yarmouth
Leicester
Severn
Birmingham
ENGLAND
Warwick
Avon
Huntingdon
Northampton
Ouse
Cambridge
Worcester
Bedford
Ipswich
The Naze
Gloucester
Buckingham
Hertford
Oxford
Chelmsford
Thames
LONDON
Reading
Brentford
N. Forel.d
Canterbury
Dover
S. Forel.d
Bristol
Bath
Guildford
Maidstone
Winchester
Salisbury
Southampton
Chichester
Lewes
Hastings
Beachy Hd
Str. of Dover
Dorchester
The Needles
I. of Wight
Portsmouth
ENGLISH CHANNEL
Alderney
C. de la Hague
Guernsey
Sark
Channel Is
(Br.)
Jersey
FRANCE
8
6
Longitude West 4 of Greenwich
2
0

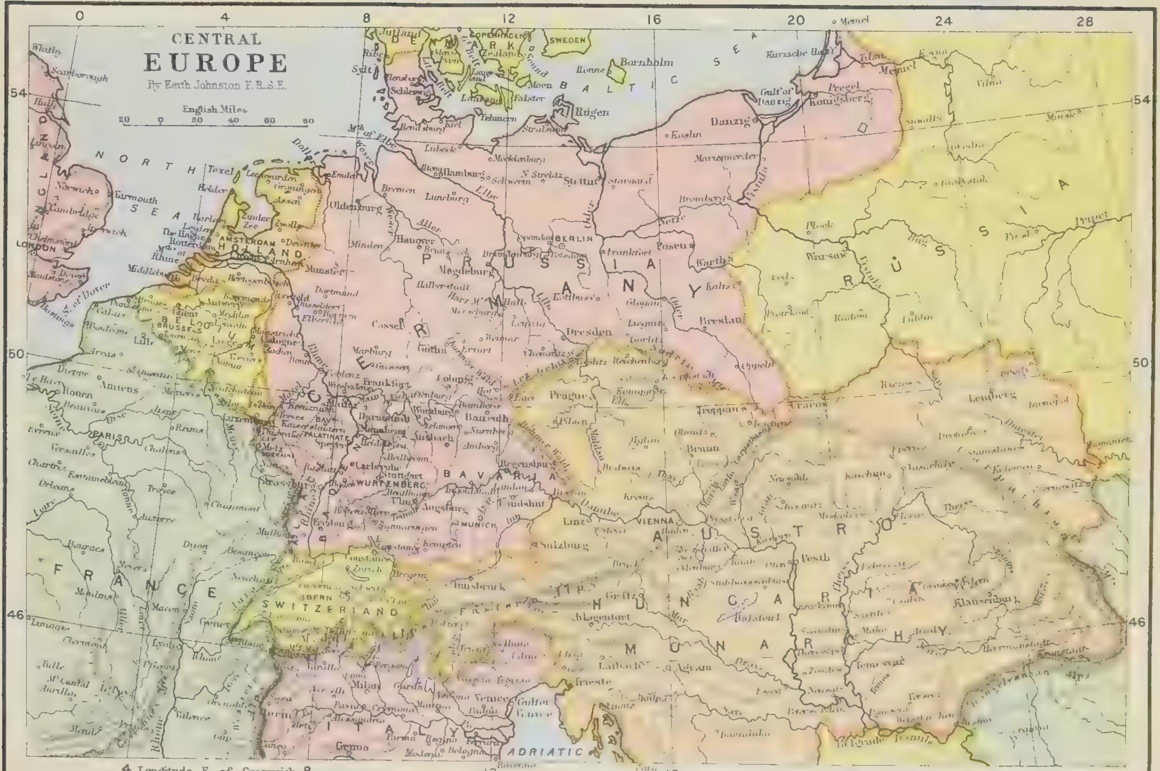

EUROPE
English Miles
ATLANTIC OCEAN
NORWAY
SWEDEN
ENGLAND
FRANCE
SPAIN
PRUSSIA
AUSTRIA HUNGARY
ITALY
RUMANIA
SERVIA
BULGARIA
TURKEY
BLACK SEA
MEDITERRANEAN SEA
AFRICA
GOZO
MALTA
10 Long. W. of Greenwich 0 Long. E. of Greenwich 10
20
30
40

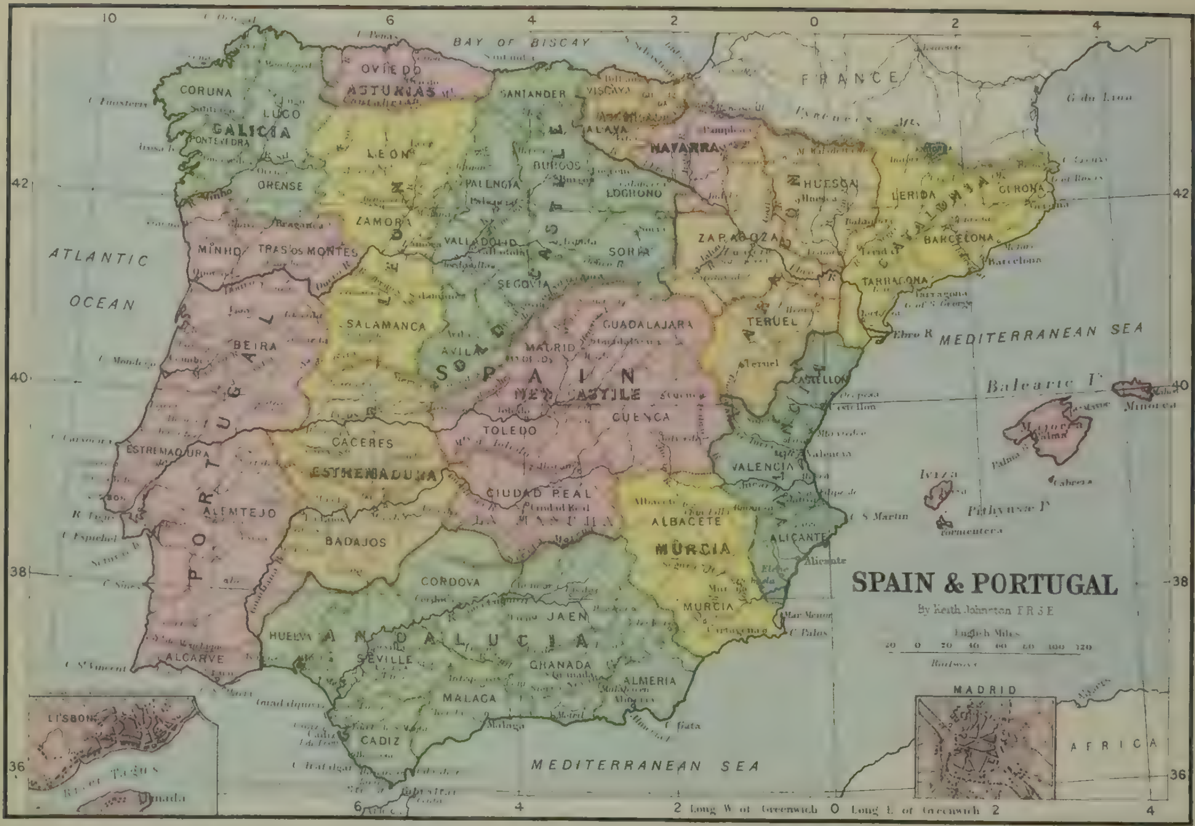

ENGLAND
& WALES
By Keith Johnston F.R.S.E.
English Miles
Principal Railways
NORTH SEA
IRISH SEA
ST GEORGES CHANNEL
ENGLISH CHANNEL
NORTH CHANNEL
SCOTLAND
ISLE OF MAN
NORTHUMBERLAND
CUMBERLAND
DURHAM
LANCASTER
CHESTER
LINCOLN
NORFOLK
SUFFOLK
ESSEX
KENT
SURREY
SUSSEX
HANTS
DORSET
DEVON
CORNWALL
SOMERSET
GLOUCESTER
OXFORD
HEREFORD
RADNOR
BRECKNOCK
DENBIGH
MONTGOMERY
SALOP
STAFFORD
DERBY
NOTTINGHAM
LEICESTER
NORTHAMPTON
BEDFORD
HERTFORD
FRANCE
ENVIRONS OF LONDON
CHANNEL ISLANDS
Guernsey
Sark
Jersey
Longitude West 4 of Greenwich
55
54
53
52

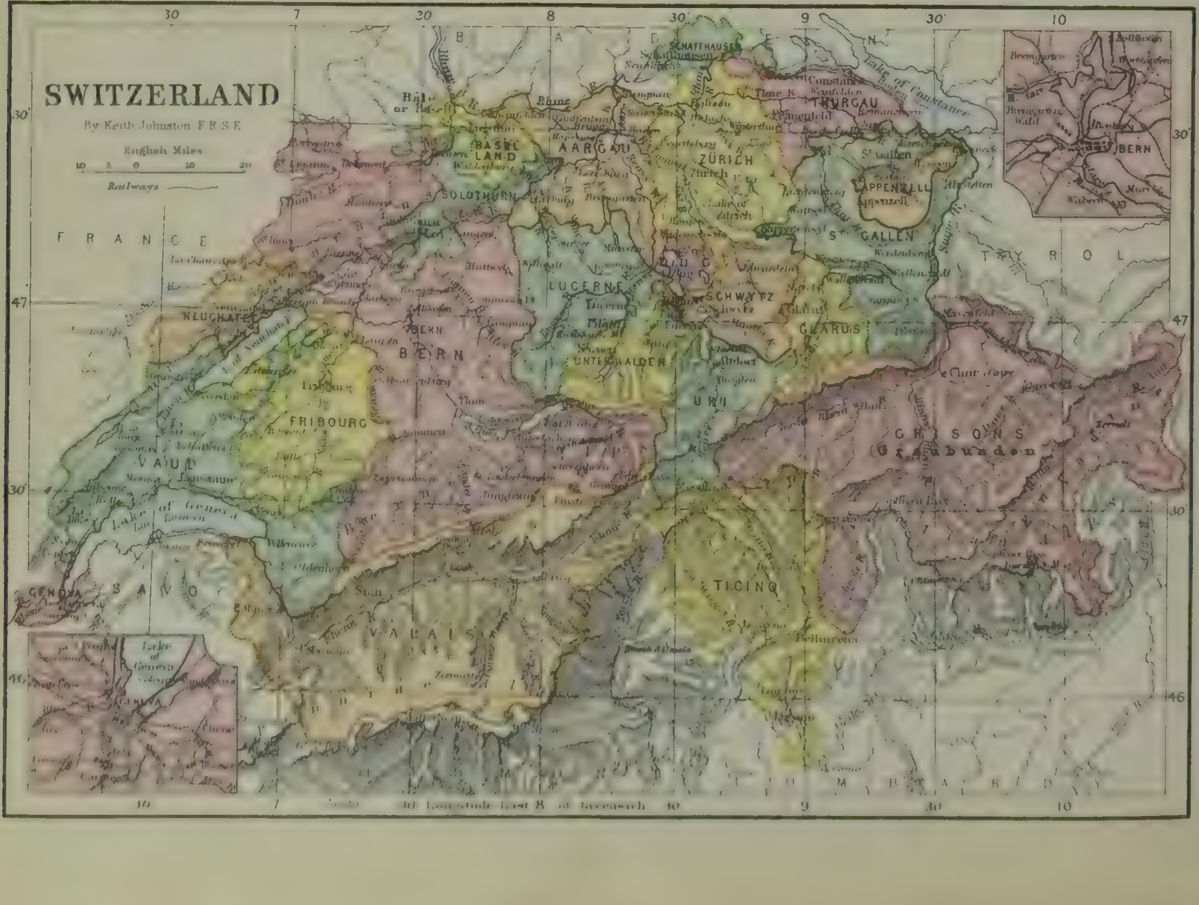

SCOTLAND
English Miles
Railways
Longitude West 7 of Greenwich
Shetland I's.
CAITHNESS
SUTHERLAND
ROSS AND CROMARTY
INVERNESS
ELGIN
NAIRN
BANFF
ABERDEEN
KINCARDINE
FORFAR
PERTH
ARGYLE
FIFE
STIRLING
DUMBARTON
RENFREW
LANARK
EDINBURGH
HADDINGTON
BERWICK
ROXBURGH
DUMFRIES
AYR
KIRKCUDBRIGHT
WIGTOWN
ENGLAND
IRELAND
ATLANTIC OCEAN
NORTH SEA
NORTH CHANNEL
The Minch
Hebrides
Edinburgh
Glasgow

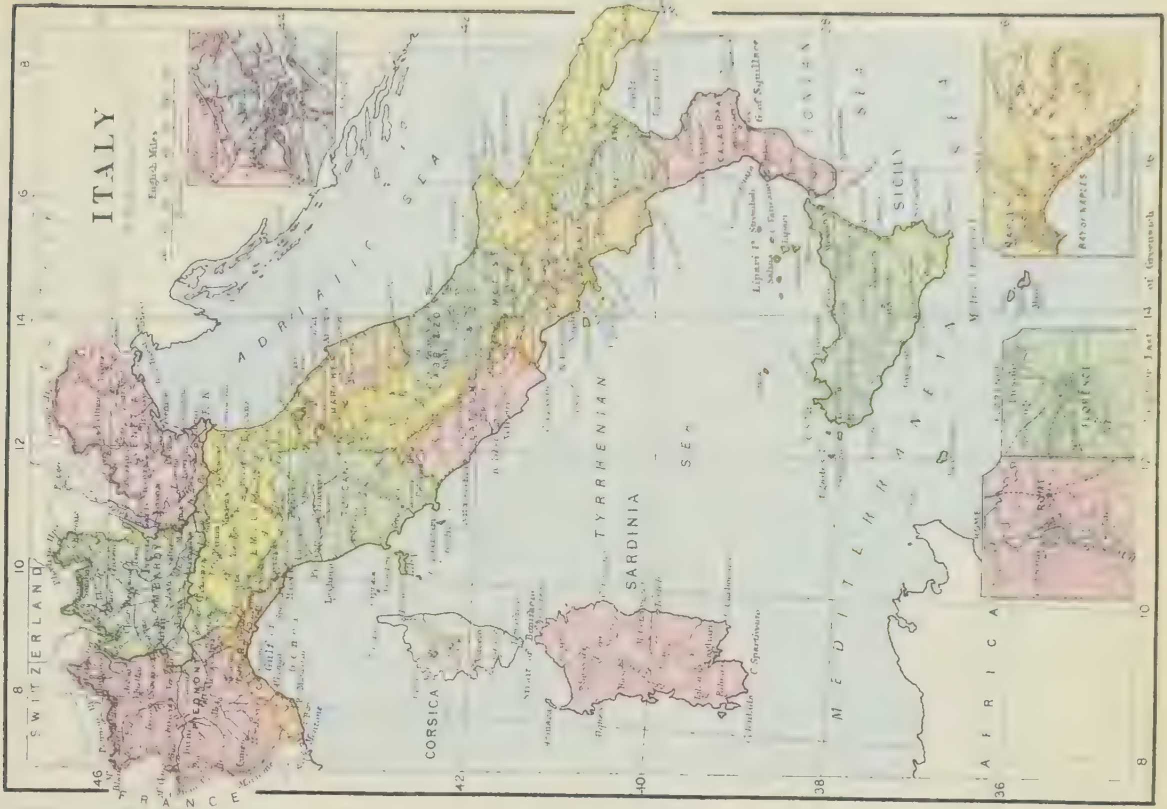

IRELAND
English Miles
Longitude West 9 of Greenwich
DUBLIN
DONEGAL
LONDONDERRY
ANTRIM
TYRONE
DOWN
FERMANAGH
MONAGHAN
CAVAN
SLIGO
MAYO
ROSCOMMON
WEST MEATH
KILDARE
WICKLOW
KINGS COUNTY
QUEENS COUNTY
KILKENNY
WEXFORD
WATERFORD
TIPPERARY
GALWAY
CLARE
LIMERICK
CORK
KERRY
CONNAUGHT
NORTH CHANNEL
IRISH SEA
ST GEORGES CHANNEL
ATLANTIC OCEAN

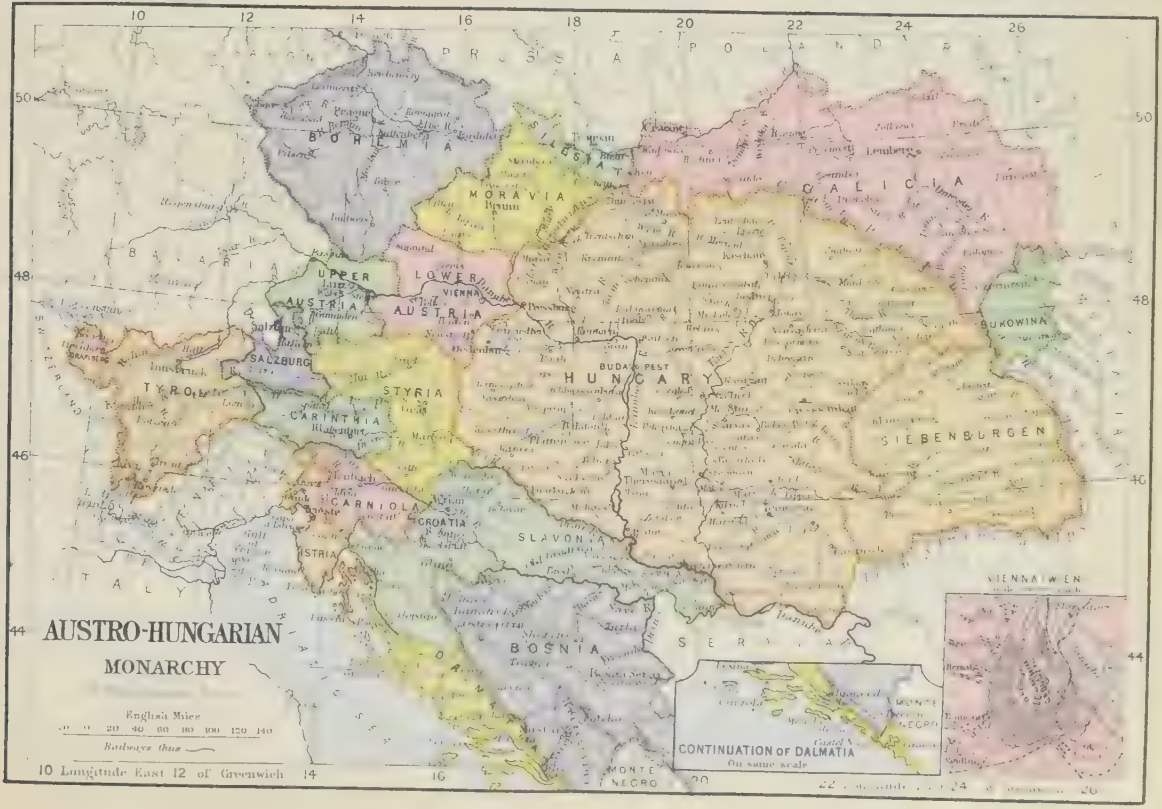

FRANCE
& SWITZERLAND
English Miles
0 20 40 60 80 100 120
Railways
ATLANTIC OCEAN
ENGLISH CHANNEL
BAY OF BISCAY
G. du Lion
MEDITERRANEAN SEA
SPAIN
SWITZERLAND
CORSICA
Pyrenees Mountains
2 Long W. of Greenwich 0 Long E. of Greenwich 2

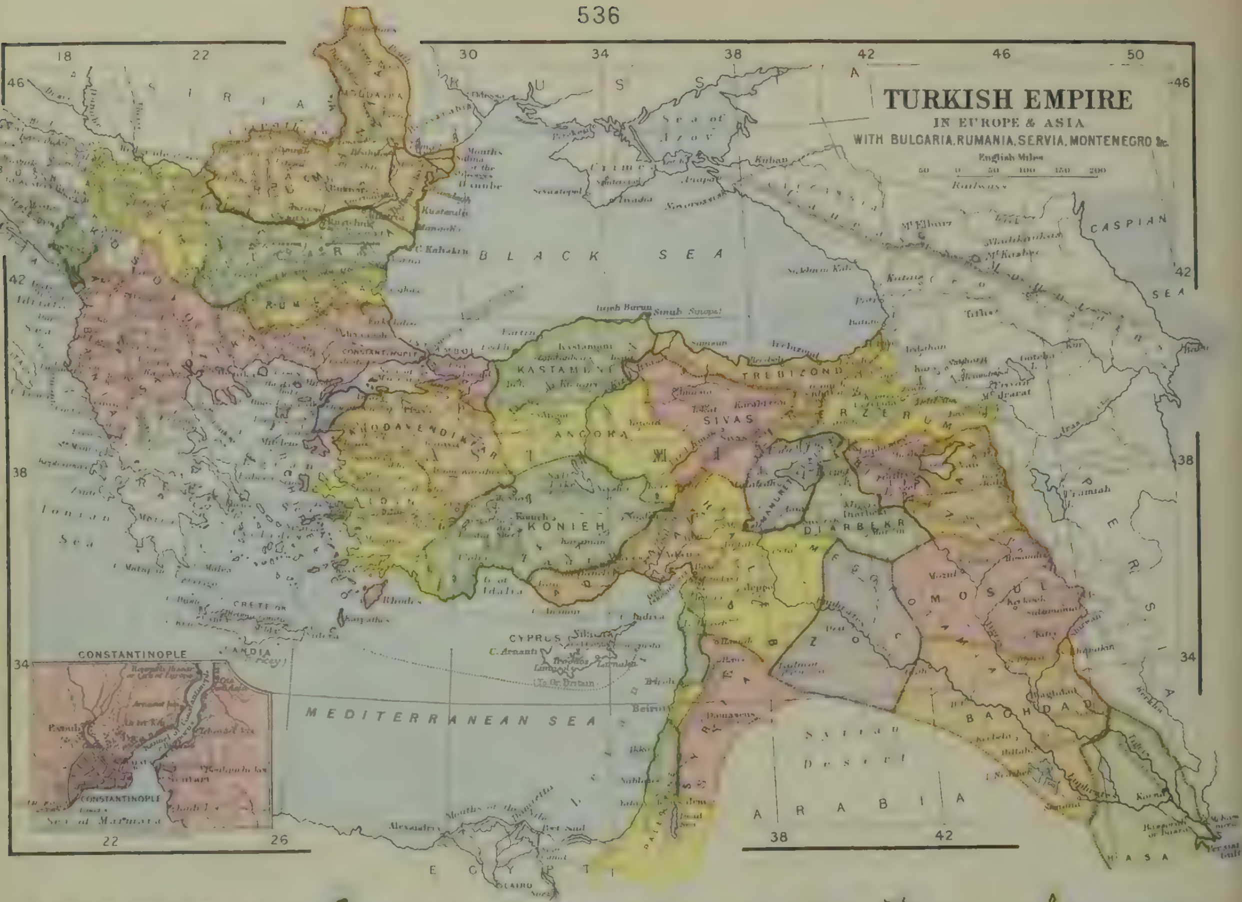

CENTRAL
EUROPE
By Keith Johnston F.R.S.E.
English Miles
20 0 20 40 60 80
NORTH SEA
BALTIC SEA
ENGLAND
LONDON
HOLLAND
AMSTERDAM
BRUSSELS
PARIS
FRANCE
PRUSSIA
GERMANY
BERLIN
BAVARIA
WURTEMBERG
MUNICH
SWITZERLAND
AUSTRO HUNGARY
VIENNA
RUSSIA
ITALY
ADRIATIC
SWEDEN
4 Longitude E. of Greenwich 8


SPAIN & PORTUGAL
By Keith Johnston F.R.S.E.
English Miles
Railways
BAY OF BISCAY
FRANCE
ATLANTIC OCEAN
MEDITERRANEAN SEA
AFRICA
SPAIN
PORTUGAL
GALICIA
ASTURIAS
OVIEDO
CORUNA
LUGO
PONTEVEDRA
ORENSE
LEON
ZAMORA
PALENCIA
BURGOS
SANTANDER
VISCAYA
ALAVA
NAVARRA
LOGRONO
SORIA
VALLADOLID
SEGOVIA
SALAMANCA
AVILA
MADRID
GUADALAJARA
NEW CASTILE
OLD CASTILE
TOLEDO
CUENCA
CACERES
ESTREMADURA
BADAJOS
CIUDAD REAL
LA MANCHA
HUESCA
ZARAGOZA
TERUEL
ARAGON
LERIDA
GERONA
BARCELONA
TARRAGONA
CATALUNA
CASTELLON
VALENCIA
ALBACETE
MURCIA
ALICANTE
CORDOVA
JAEN
HUELVA
SEVILLE
GRANADA
ALMERIA
MALAGA
CADIZ
ANDALUCIA
MINHO
TRAS OS MONTES
BEIRA
ALEMTEJO
ALGARVE
Balearic I.
Majorca
Minorca
Iviza
Pithyusae I.
LISBON
MADRID
Long. W. of Greenwich
Long. E. of Greenwich
42
40
38
36

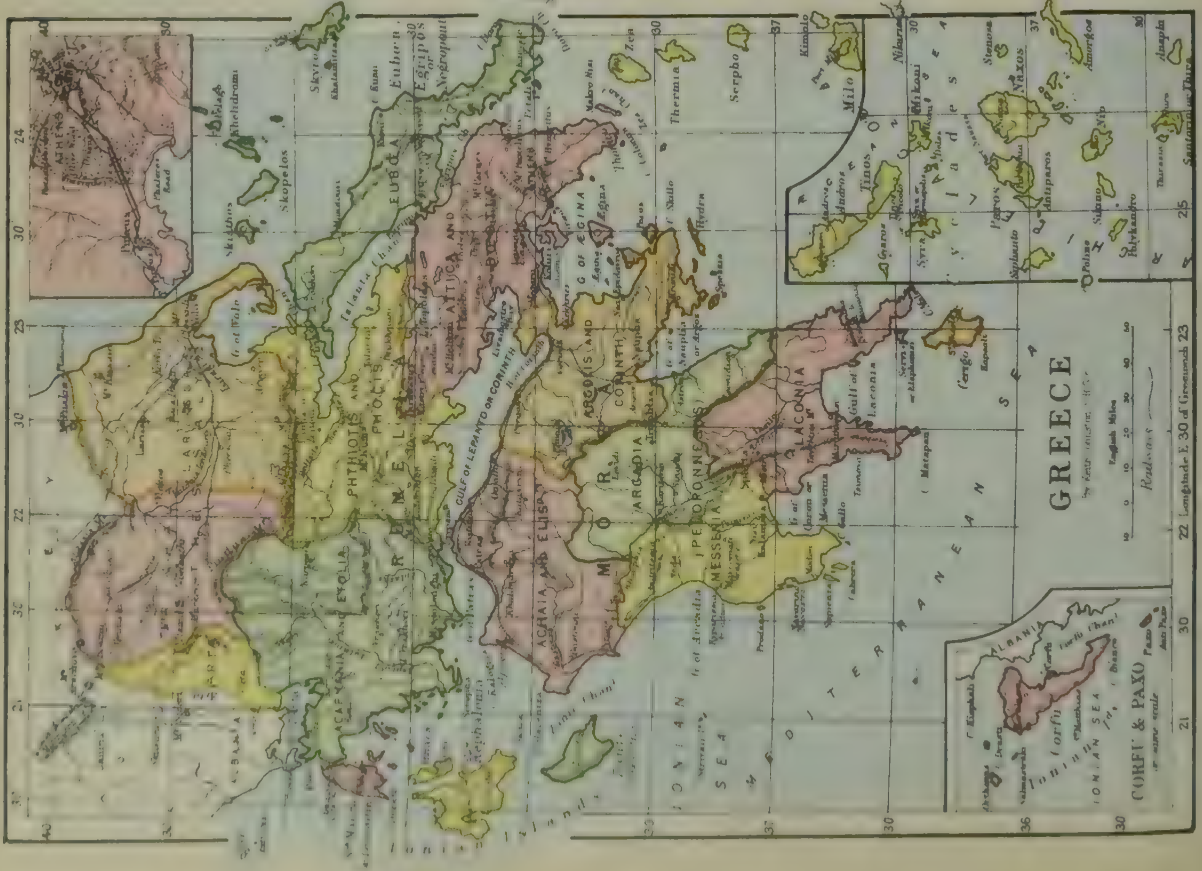

SWITZERLAND
By Keith Johnston F.R.S.E.
English Miles
Railways
BADEN
FRANCE
TYROL
SAVOY
LOMBARDY
Lake of Constance
Lake of Geneva
SCHAFFHAUSEN
BASEL LAND
Bâle or Basel
AARGAU
ZÜRICH
THURGAU
ST GALLEN
APPENZELL
SOLOTHURN
LUCERNE
ZUG
SCHWYTZ
GLARUS
NEUCHATEL
BERN
FRIBOURG
UNTERWALDEN
URI
GRISONS (Graubunden)
VAUD
VALAIS
TICINO
GENEVA
BERN
Longitude E. of Greenwich
47
46


ITALY
English Miles
SWITZERLAND
FRANCE
ADRIATIC SEA
TYRRHENIAN SEA
IONIAN SEA
MEDITERRANEAN SEA
CORSICA
SARDINIA
SICILY
AFRICA
PIEDMONT
LOMBARDY
CALABRIA
Lipari Is.
Bay of Naples
Rome
Longitude East 14 of Greenwich

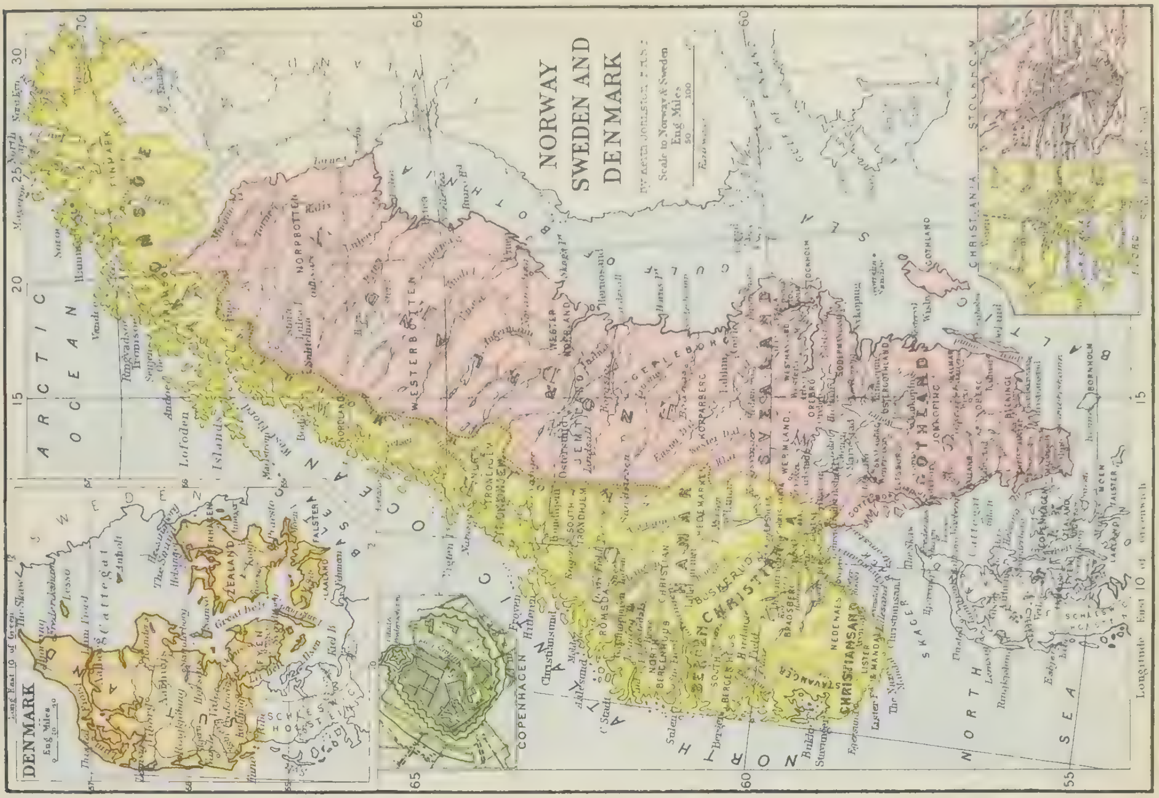

AUSTRO-HUNGARIAN
MONARCHY
English Miles
0 10 20 40 60 80 100 120 140
Railways thus
10 Longitude East 12 of Greenwich
PRUSSIA
POLAND
BAVARIA
BOHEMIA
Prague
MORAVIA
Brunn
SILESIA
GALICIA
Cracow
Lemberg
UPPER AUSTRIA
Linz
LOWER AUSTRIA
VIENNA
Pressburg
SALZBURG
TYROL
Innsbruck
STYRIA
CARINTHIA
CARNIOLA
CROATIA
SLAVONIA
ISTRIA
HUNGARY
BUDA PEST
SIEBENBURGEN
BUKOWINA
BOSNIA
SERVIA
MONTE NEGRO
ITALY
ADRIATIC SEA
CONTINUATION OF DALMATIA
On same scale
VIENNA WIEN

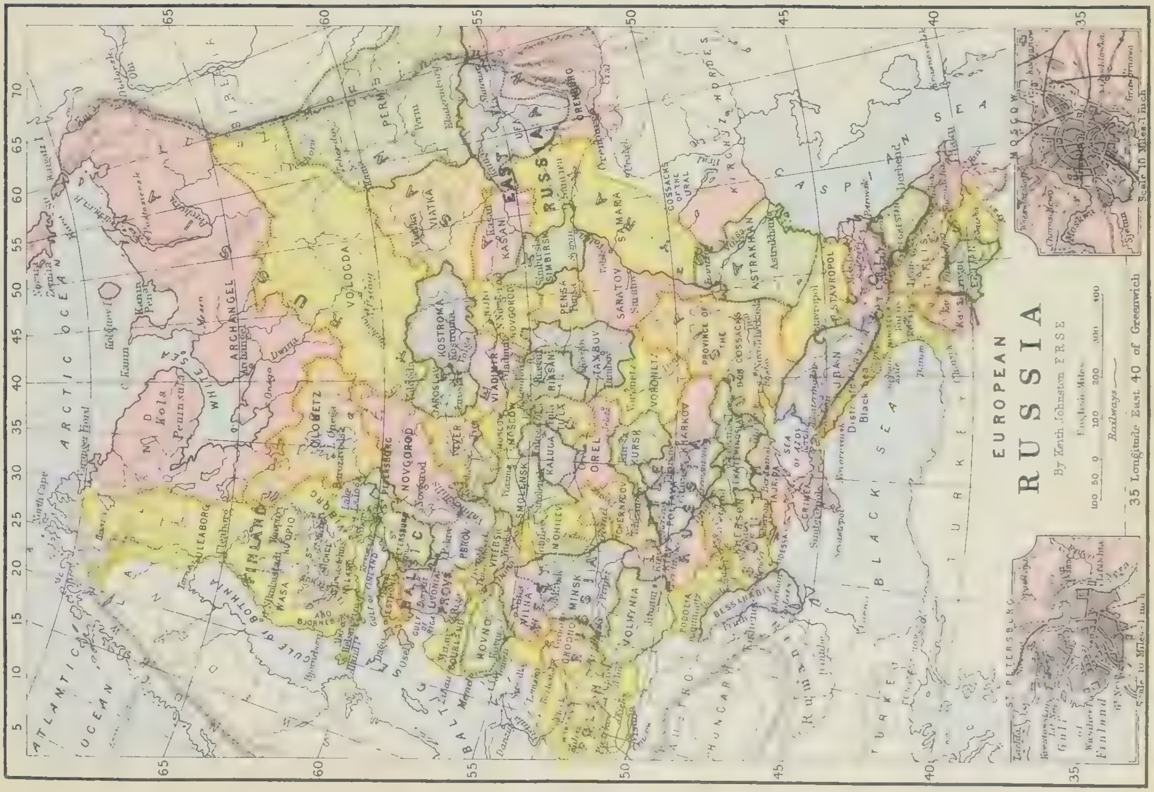


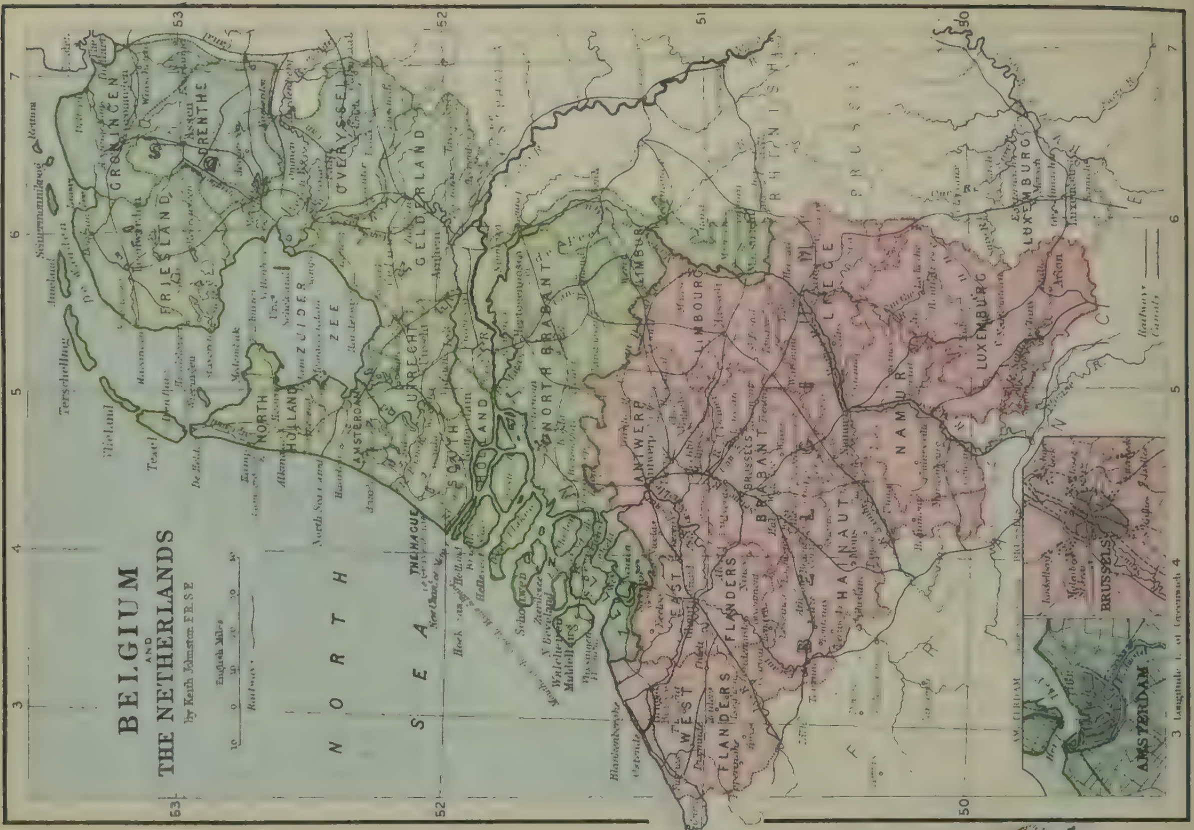
TURKISH EMPIRE
IN EUROPE & ASIA
WITH BULGARIA, RUMANIA, SERVIA, MONTENEGRO &c.
English Miles
Railways
BLACK SEA
MEDITERRANEAN SEA
Sea of Azov
CASPIAN SEA
CYPRUS
CRETE or CANDIA
KASTAMUNI
KHODAVENDIAR
ANGORA
SIVAS
TREBIZOND
ERZERUM
KONIEH
DIARBEKR
MOSUL
BAGHDAD
ARABIA
Syrian Desert
PERSIA
EGYPT
CAIRO
Alexandria
Port Said
Beirut
Rhodes
Constantinople
Ionian Sea
CONSTANTINOPLE
Scutari
Sea of Marmara
RUMANIA
BULGARIA
RUMELIA
Kustendji
Sinub (Sinope)

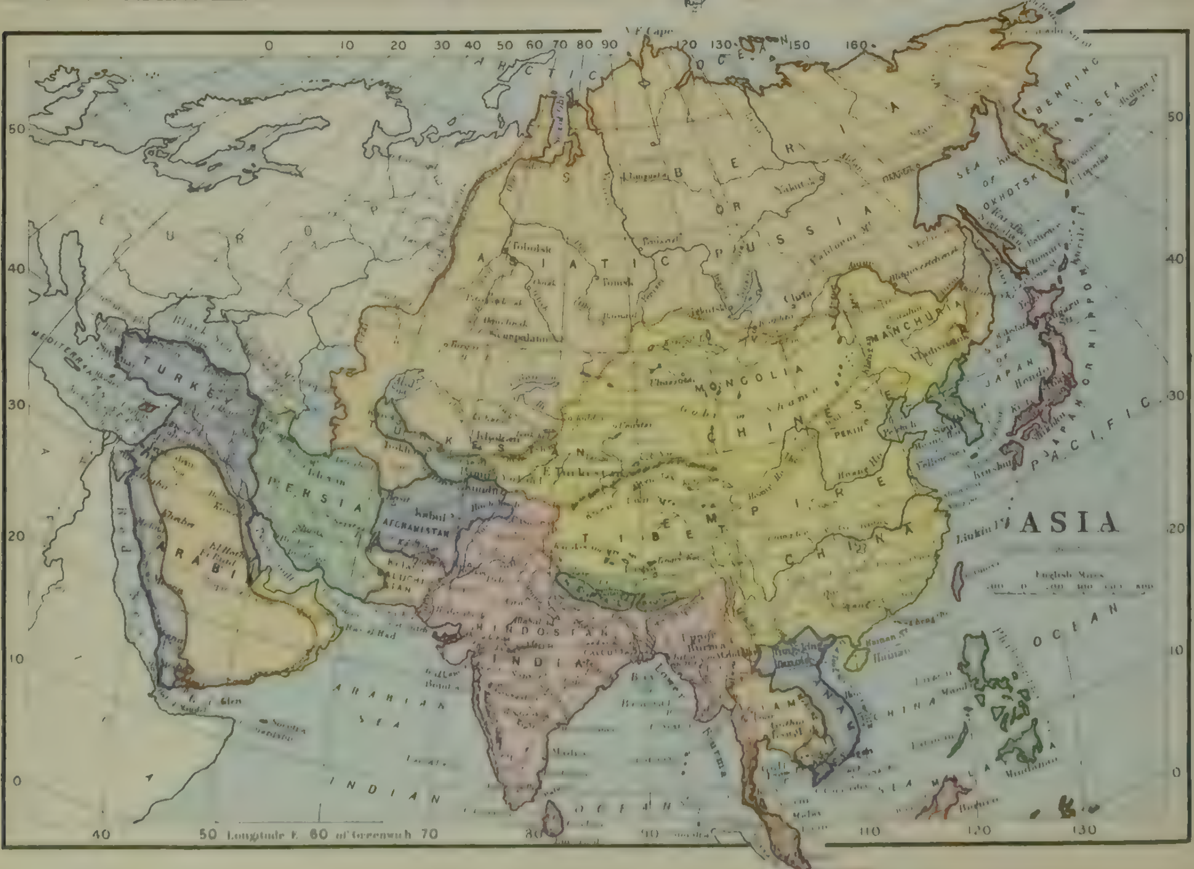


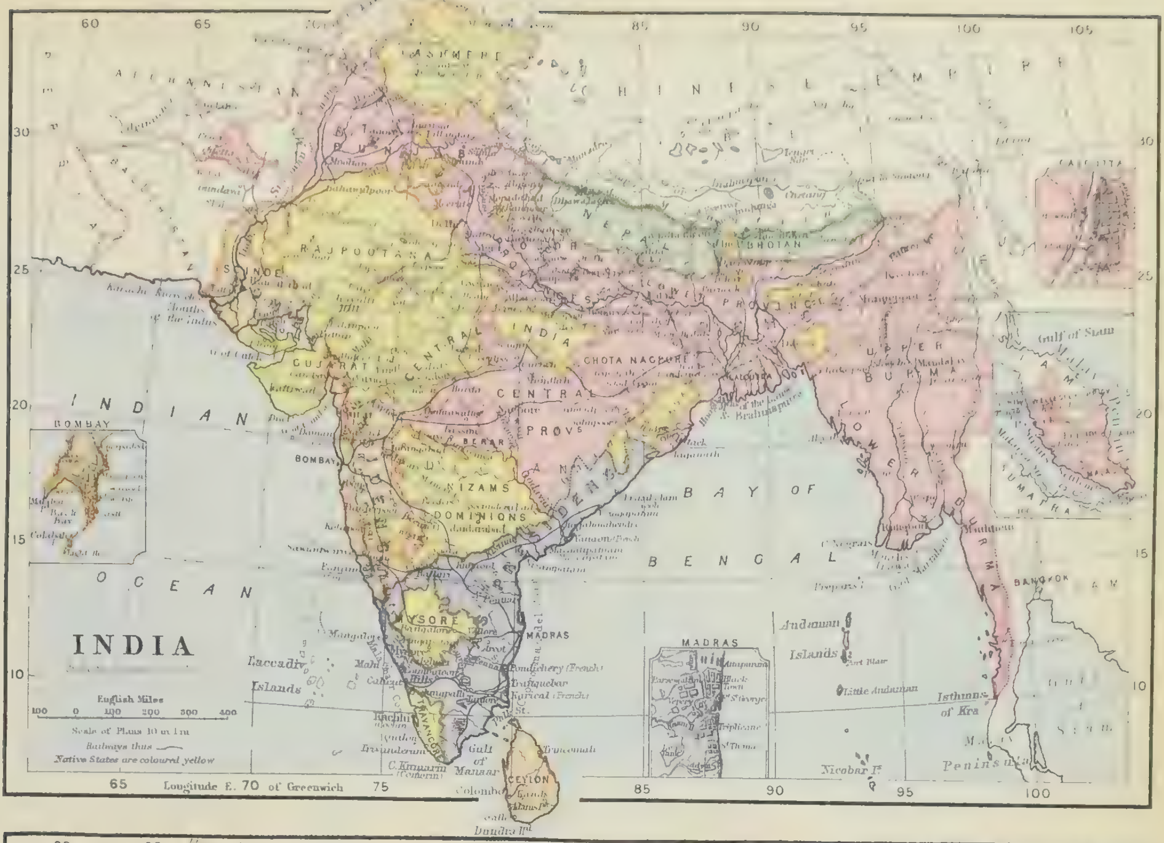
GREECE
English Miles
Railways
Longitude E. 30 of Greenwich 23
CORFU & PAXO
ALBANIA
Corfu
Paxo
Anti Paxo
IONIAN SEA
ATHENS
Piraeus
Phaleron Road
THESSALY
PHTHIOTIS AND PHOCIS
ATTICA AND BOEOTIA
EUBOEA
Egripos or Negropont
AETOLIA AND ACARNANIA
ARTA
ARGOLIS AND CORINTH
ACHAIA AND ELIS
ARCADIA
MESSENIA
LACONIA
PELOPONNESUS
MOREA
GULF OF LEPANTO OR CORINTH
G. OF ÆGINA
Ægina
Hydra
Cerigo
Skopelos
Skyros
Thermia
Serpho
Milo
Kimolo
Andros
Tinos
Mikoni
Syra
Naxos
Paros
Antiparos
Siphanto
Nio
Amorgos
Santorino or Thera
Polykandro
CYCLADES
MEDITERRANEAN SEA
IONIAN SEA
Ionian Islands
Kephalonia
Zante
Mt. Olympus
Cape Matapan

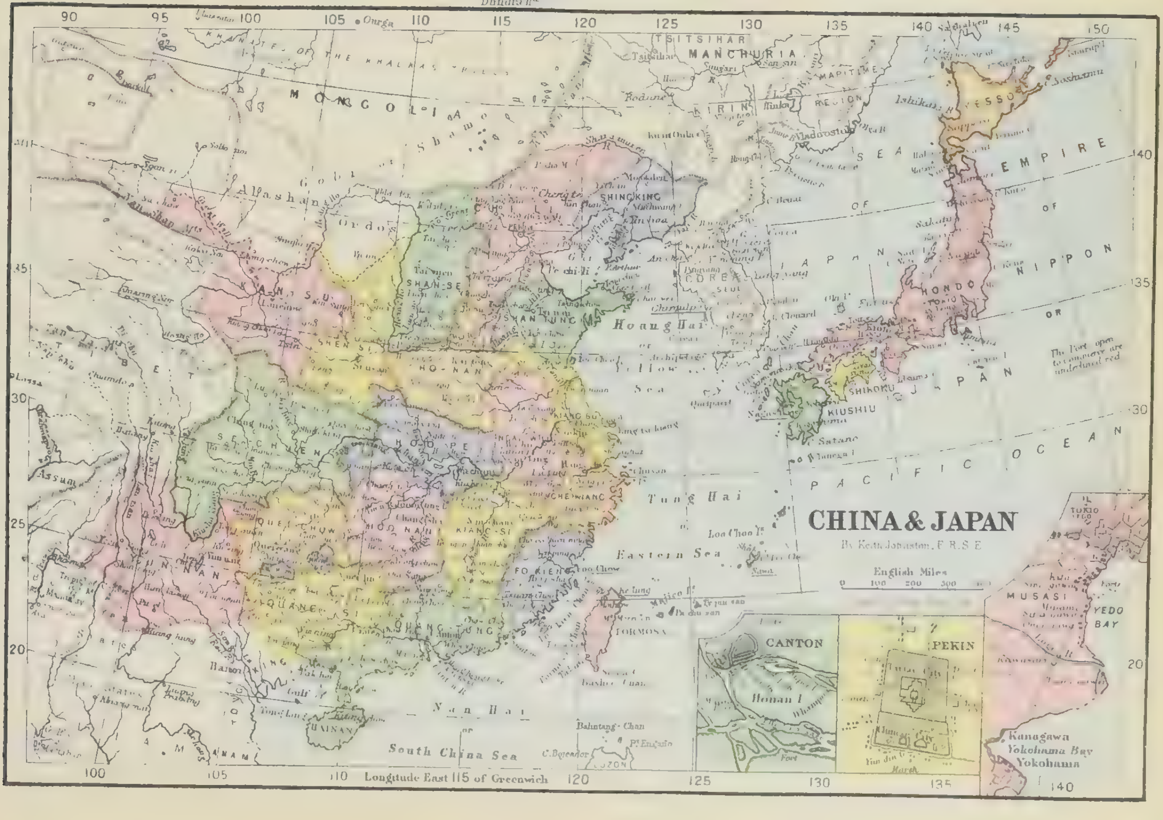

NORWAY SWEDEN AND DENMARK
By Keith Johnston F.R.S.E.
Scale to Norway & Sweden
Eng. Miles
DENMARK
COPENHAGEN
CHRISTIANIA
STOCKHOLM
ARCTIC OCEAN
NORTH SEA
GULF OF BOTHNIA
BALTIC SEA
NORWAY
SWEDEN
Longitude East 10 of Greenwich

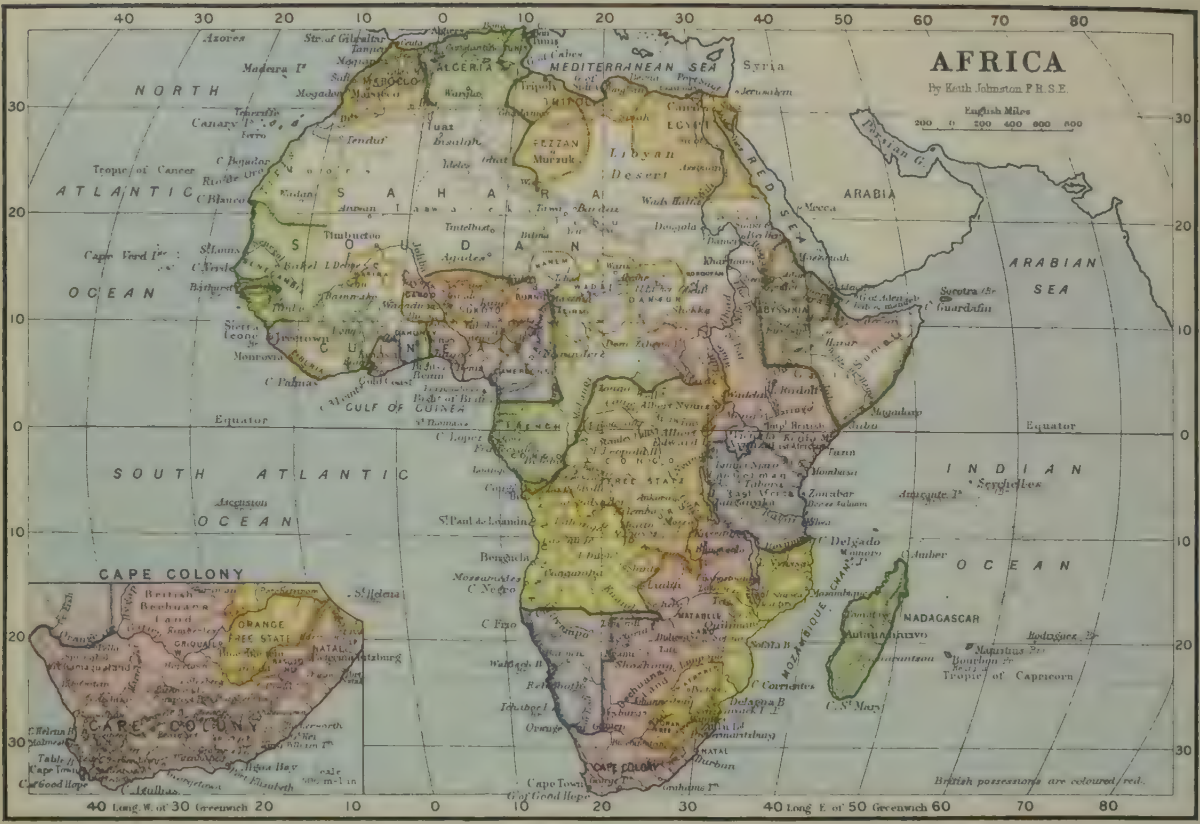

EUROPEAN RUSSIA
By Keith Johnston F.R.S.E.
English Miles
100 50 0 100 200 300 400
Railways
35 Longitude East 40 of Greenwich
MOSCOW
Scale 10 Miles 1 Inch
ST PETERSBURG
Scale 10 Miles 1 Inch
ARCTIC OCEAN
WHITE SEA
BLACK SEA
CASPIAN SEA
SEA OF AZOF
FINLAND
ARCHANGEL
VOLOGDA
PERM
EAST RUSSIA
TURKEY
HUNGARY

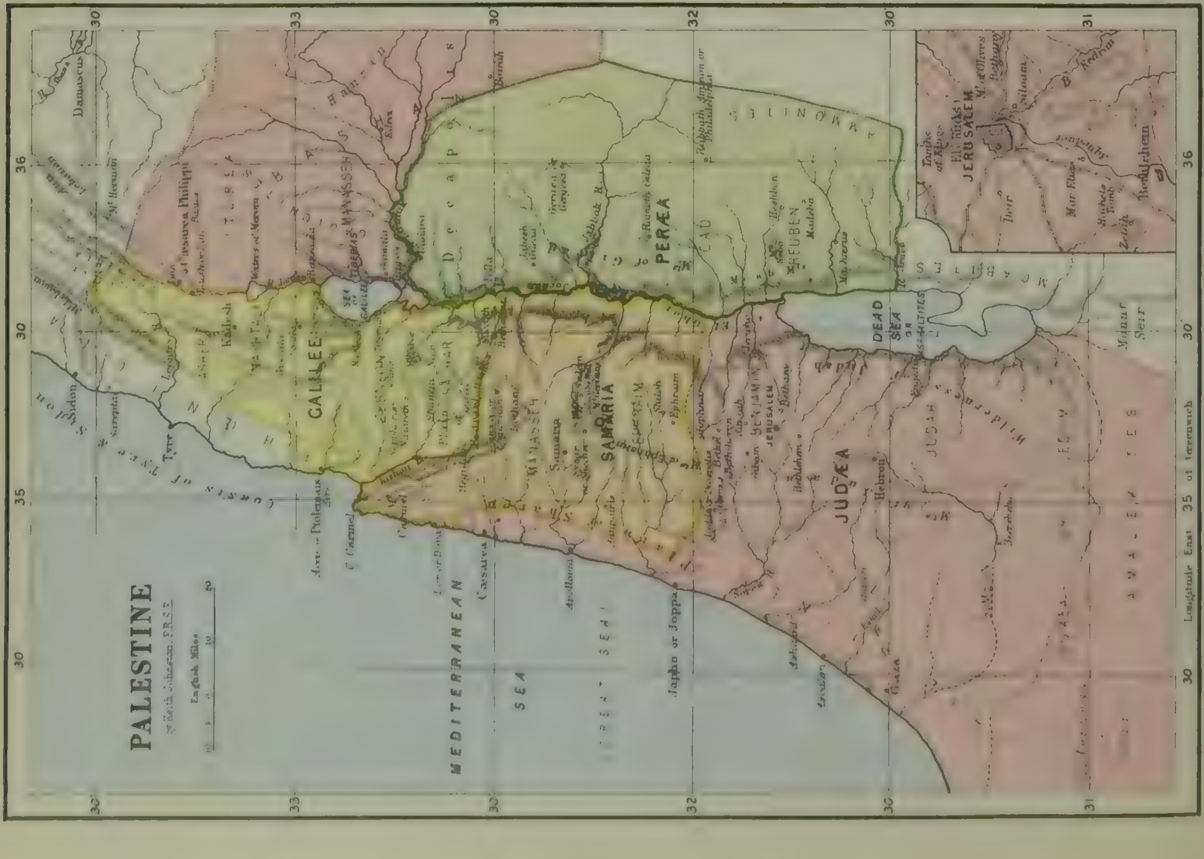

BELGIUM
AND
THE NETHERLANDS
by Keith Johnston F.R.S.E.
English Miles
Railways
NORTH SEA
GRONINGEN
FRIESLAND
DRENTHE
OVERYSSEL
GELDERLAND
NORTH HOLLAND
ZUIDER ZEE
AMSTERDAM
UTRECHT
SOUTH HOLLAND
THE HAGUE
NORTH BRABANT
LIMBURG
ANTWERP
BRUSSELS
BRABANT
LIMBOURG
LIEGE
NAMUR
HAINAUT
EAST FLANDERS
WEST FLANDERS
LUXEMBURG
RHENISH PRUSSIA
FRANCE
AMSTERDAM
BRUSSELS
Longitude E. of Greenwich

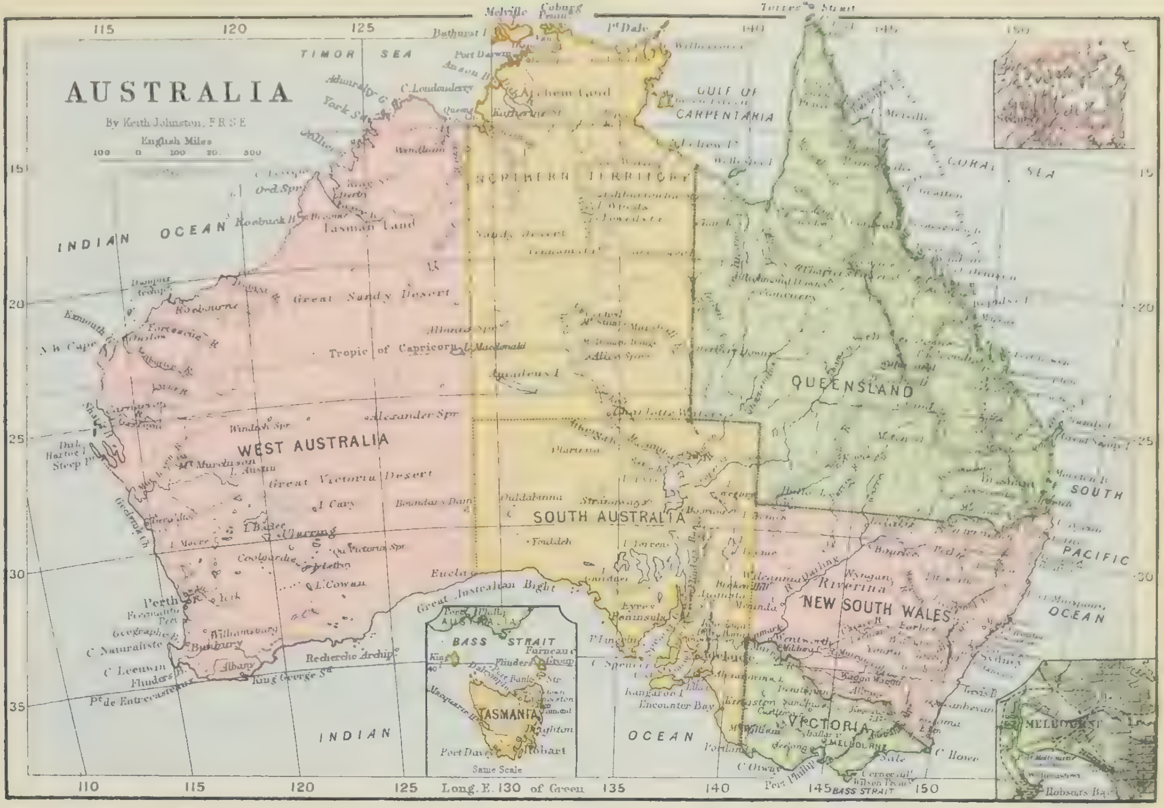

ASIA
English Miles
ARCTIC OCEAN
SIBERIA OR ASIATIC RUSSIA
EUROPE
MEDITERRANEAN
Black Sea
TURKEY
PERSIA
ARABIA
AFGHANISTAN
BELUCHISTAN
TURKESTAN
MONGOLIA
MANCHURIA
CHINESE EMPIRE
TIBET
CHINA
HINDOSTAN
INDIA
SIAM
ANAM
ARABIAN SEA
INDIAN OCEAN
CHINA SEA
SEA OF OKHOTSK
BEHRING SEA
SEA OF JAPAN
NIPPON
PACIFIC OCEAN
Longitude E. of Greenwich

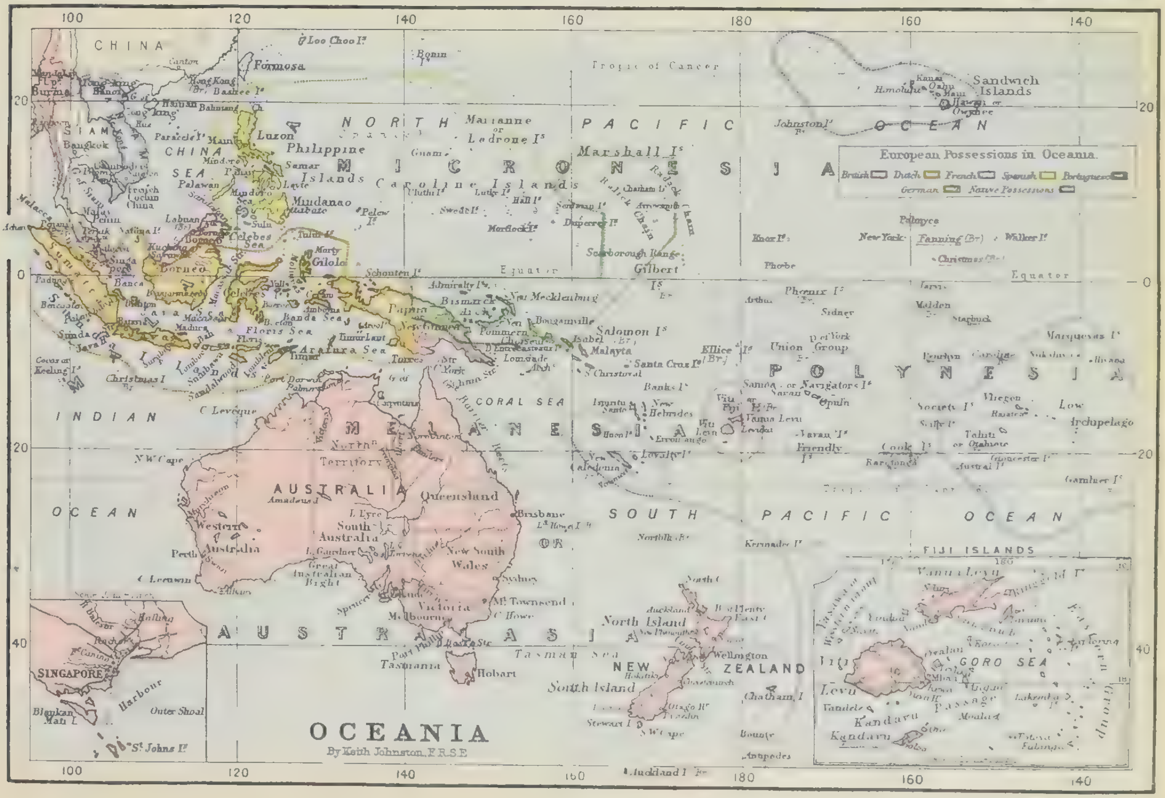

INDIA
English Miles
100 0 100 200 300 400
Scale of Plans 10 in 1 m
Railways thus
Native States are coloured yellow
Longitude E. 70 of Greenwich
BOMBAY
MADRAS
CALCUTTA
INDIAN OCEAN
BAY OF BENGAL
CHINESE EMPIRE
AFGHANISTAN
BALUCHISTAN
KASHMIR
PUNJAB
RAJPOOTANA
SINDE
GUJARAT
CENTRAL INDIA
CHOTA NAGPORE
CENTRAL PROVS
BERAR
NIZAMS DOMINIONS
MYSORE
NEPAL
BHOTAN
UPPER BURMA
LOWER BURMA
SIAM
SUMATRA
Gulf of Siam
BANGKOK
CEYLON
Laccadiv Islands
Andaman Islands
Little Andaman
Nicobar Is.
Isthmus of Kra
Malay Peninsula
Gulf of Manaar
Colombo
Dondra Hd.

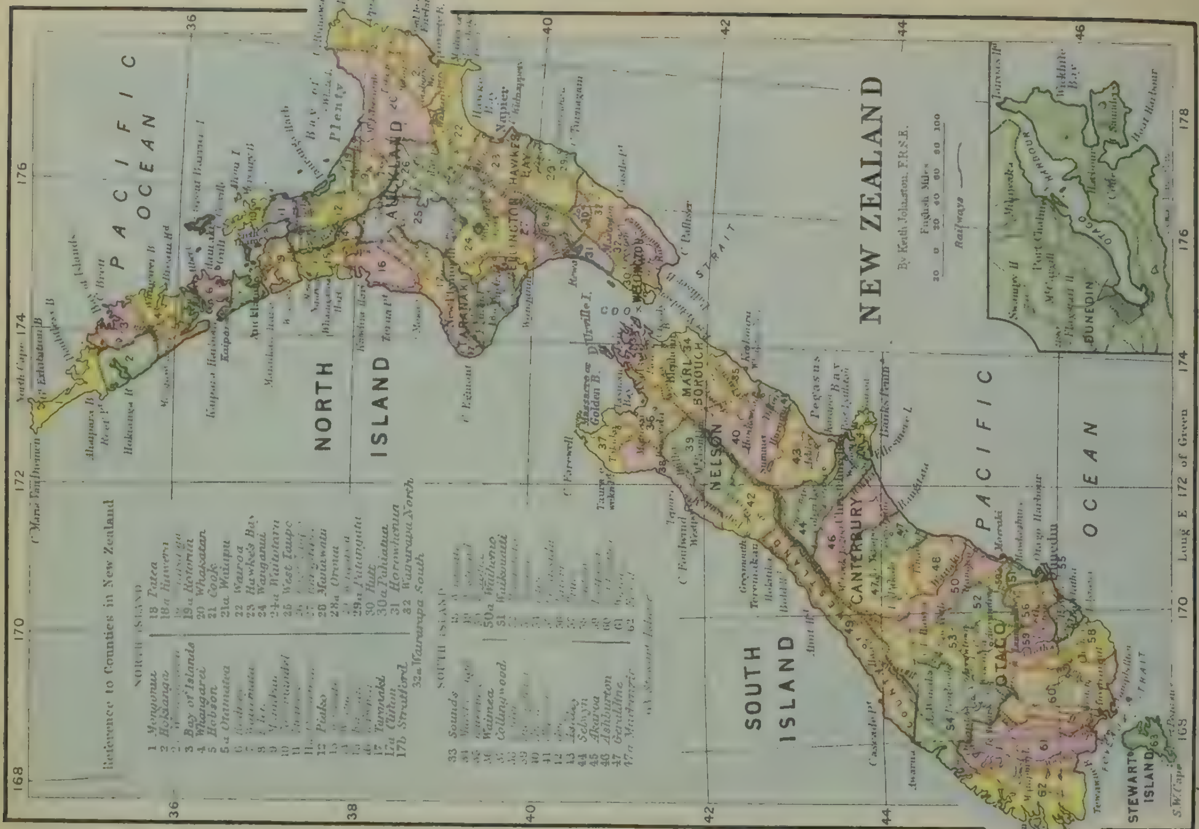

CHINA & JAPAN
By Keith Johnston, F.R.S.E.
English Miles
0 100 200 300
Longitude East 115 of Greenwich
The Ports open to commerce are underlined red
CANTON
Honan I.
PEKIN
MANCHURIA
MARITIME REGION
MONGOLIA
KIRIN
SHINGKING
COREA
JAPAN SEA
EMPIRE OF NIPPON OR JAPAN
YESSO
HONDO
SHIKOKU
KIUSHIU
TOKIO
MUSASI
YEDO BAY
Kanagawa
Yokohama Bay
Yokohama
PACIFIC OCEAN
Tung Hai
Eastern Sea
Loo Choo Is.
Hoang Hai or Yellow Sea
Nan Hai or South China Sea
FORMOSA
HAINAN
TONQUIN
ANNAM
LUZON
TIBET
Assam
Gobi or Shamo
Alashan
Ordos
SHAN-SE
SHAN-TUNG
HO-NAN
SHEN-SI
KAN-SU
SE-CHUEN
HOO-PE
KIANG-SU
CHE-KIANG
KIANG-SI
FO-KIEN
QUANG-TUNG
QUANG-SI
QUEI-CHOW
YUN-NAN
HOO-NAN
Urga
Tsitsihar


AFRICA
By Keith Johnston F.R.S.E.
English Miles
British possessions are coloured red.
NORTH ATLANTIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
ARABIAN SEA
MEDITERRANEAN SEA
RED SEA
Persian G.
GULF OF GUINEA
Equator
Tropic of Cancer
Tropic of Capricorn
ARABIA
Syria
Jerusalem
Mecca
Azores
Madeira Is
Canary Is
Cape Verd Is
Ascension
St Helena
Str. of Gibraltar
MAROCCO
ALGERIA
Tunis
Tripoli
EGYPT
FEZZAN
Murzuk
Libyan Desert
SAHARA
SOUDAN
Timbuctoo
St Louis
Sierra Leone
Monrovia
C Palmas
Gold Coast
GUINEA
ABYSSINIA
Socotra
C. Guardafui
CONGO FREE STATE
St Paul de Loanda
Benguela
C Frio
Walfisch B.
Orange R.
MADAGASCAR
Mauritius
Bourbon
C. St Mary
MOZAMBIQUE CHANNEL
C. Delgado
C Corrientes
Delagoa B.
NATAL
Durban
CAPE COLONY
Cape Town
C. of Good Hope
CAPE COLONY
British Bechuana Land
ORANGE FREE STATE
GRIQUALAND
NATAL
Pietermaritzburg
Table B.
C. Agulhas
Long. W. of Greenwich
Long. E. of Greenwich


PALESTINE
By Keith Johnston F.R.S.E.
English Miles
MEDITERRANEAN SEA
GREAT SEA
DEAD SEA
SEA OF GALILEE
GALILEE
SAMARIA
JUDÆA
PERÆA
Decapolis
MANASSEH
EPHRAIM
BENJAMIN
REUBEN
JUDAH
GAD
AMMONITES
MOABITES
EDOM
AMALEKITES
Damascus
Tyre
Sidon
Acre or Ptolemais
C. Carmel
Caesarea
Joppa
Gaza
Ascalon
Ashdod
Hebron
Bethlehem
Jericho
Samaria
Shechem
Rabbath Ammon or Philadelphia
Wilderness of Judah
JERUSALEM
Mt. of Olives
Bethany
Siloam
B. Kedron
Tombs of Kings
Bethlehem
Longitude East of Greenwich

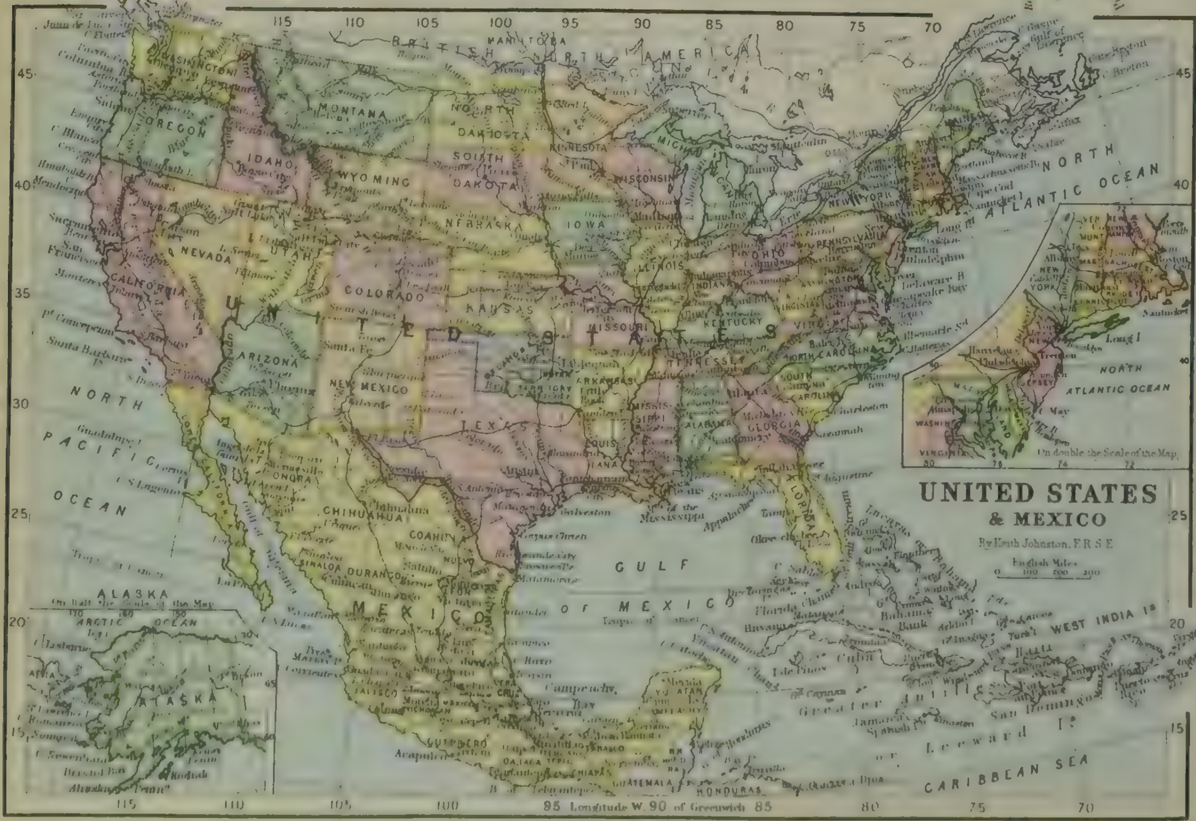

AUSTRALIA
By Keith Johnston, F.R.S.E.
English Miles
100 0 100 200 300
INDIAN OCEAN
TIMOR SEA
GULF OF CARPENTARIA
CORAL SEA
NORTHERN TERRITORY
WEST AUSTRALIA
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
BASS STRAIT
Great Sandy Desert
Great Victoria Desert
Tropic of Capricorn
Great Australian Bight
INDIAN
OCEAN
SOUTH PACIFIC OCEAN
Perth
Hobart
Melbourne
Sydney
Brisbane
Adelaide
Port Darwin
Albany
King George Sd
Riverina
Arnhem Land
Tasman Land
MELBOURNE
Port Phillip
Hobsons Bay
Same Scale
Long. E. 130 of Green


OCEANIA
By Keith Johnston, F.R.S.E.
CHINA
Formosa
Loo Choo Is
Bonin Is
Tropic of Cancer
Sandwich Islands
NORTH PACIFIC OCEAN
Marianne or Ladrone Is
Marshall Is
MICRONESIA
Philippine Islands
Caroline Islands
Luzon
Mindanao
SIAM
CHINA SEA
Borneo
Celebes
Sumatra
Java
Gilolo
Equator
Admiralty Is
New Mecklenburg
New Pommern
Solomon Is
Gilbert Is
Ellice Is
Phoenix Is
Union Group
Samoa or Navigators Is
POLYNESIA
Marquesas Is
Society Is
Tahiti
Low Archipelago
Friendly Is
Cook Is
MELANESIA
New Hebrides
New Caledonia
Loyalty Is
Fiji Is
CORAL SEA
Arafura Sea
Banda Sea
Floris Sea
INDIAN OCEAN
AUSTRALIA
Western Australia
Northn Territory
South Australia
Queensland
New South Wales
Victoria
Tasmania
Brisbane
Sydney
Melbourne
Hobart
Perth
SOUTH PACIFIC OCEAN
AUSTRALASIA
Tasman Sea
NEW ZEALAND
North Island
South Island
Wellington
Chatham I
Auckland I
European Possessions in Oceania.
British 🟥 Dutch 🟨 French 🟦 Spanish 🟩 Portuguese ▨
German ▨ Native Possessions ☐
SINGAPORE
Harbour
Outer Shoal
St Johns Is
FIJI ISLANDS
Vanua Levu
Viti Levu
Kandavu
GORO SEA



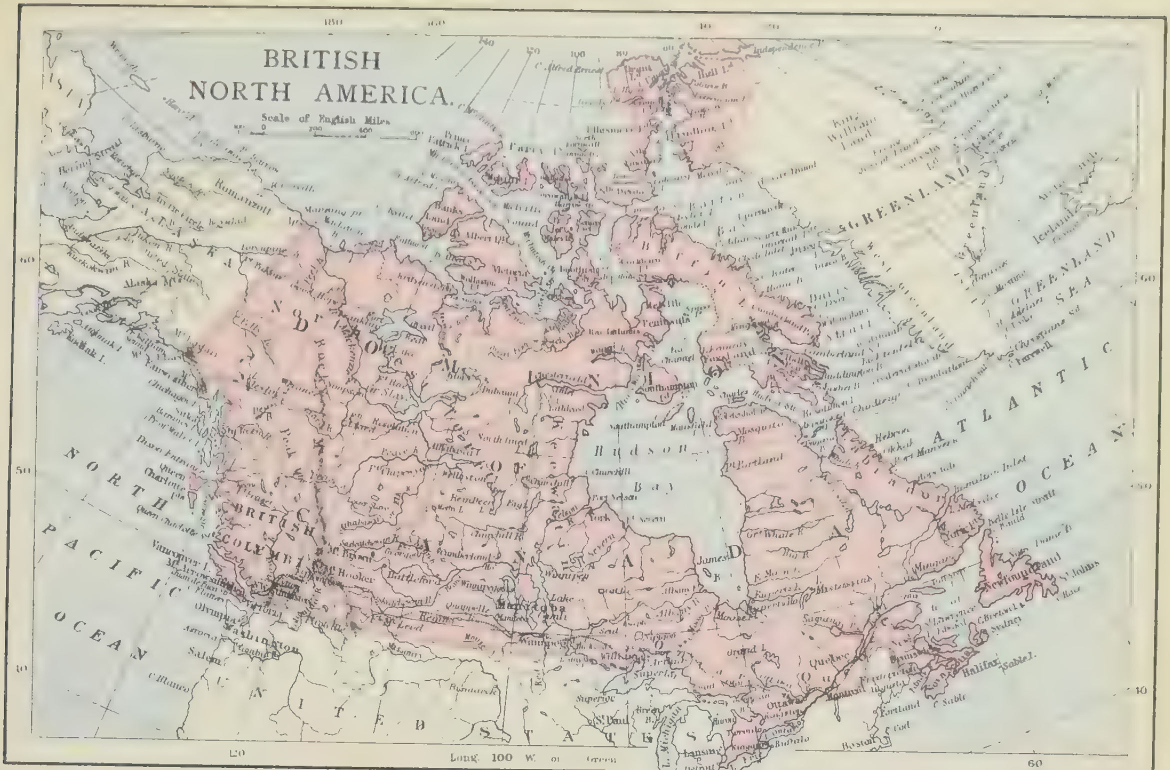
NEW ZEALAND

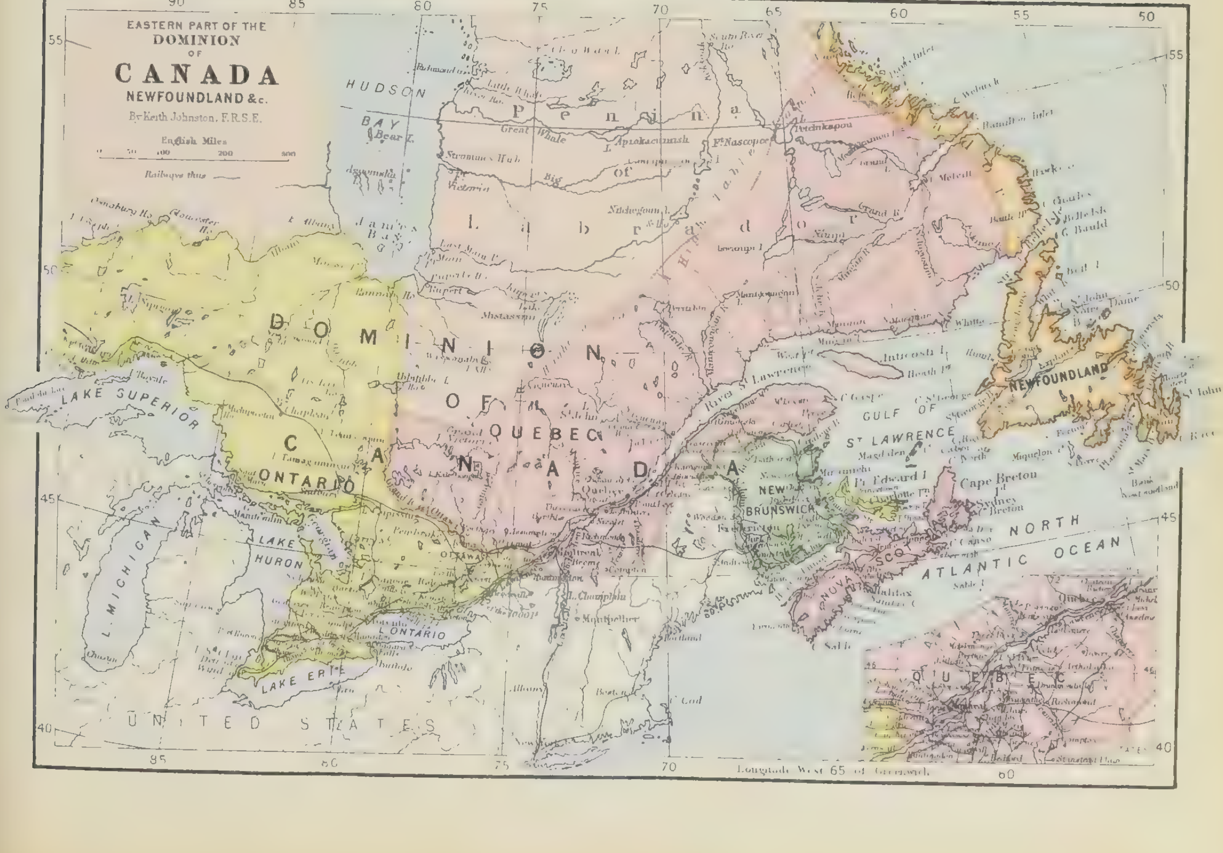
By Keith Johnston, F.R.S.E.

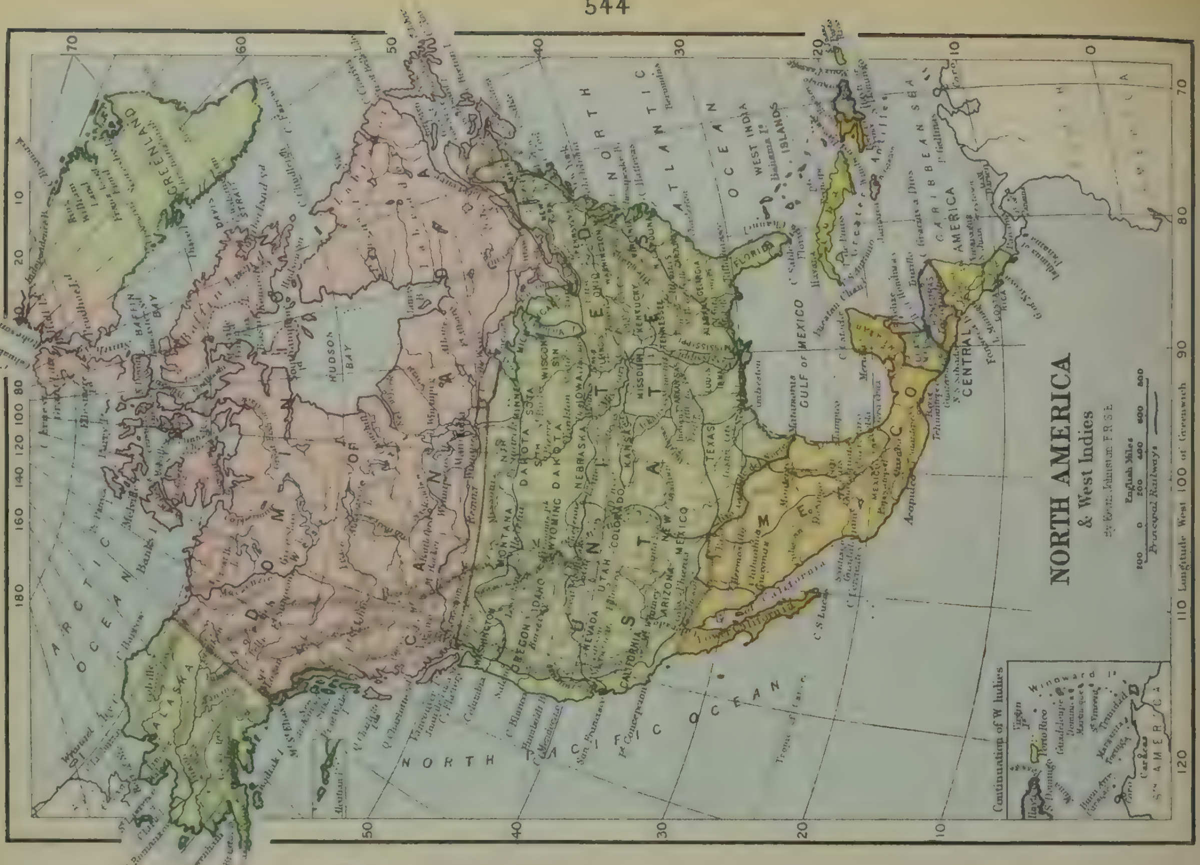


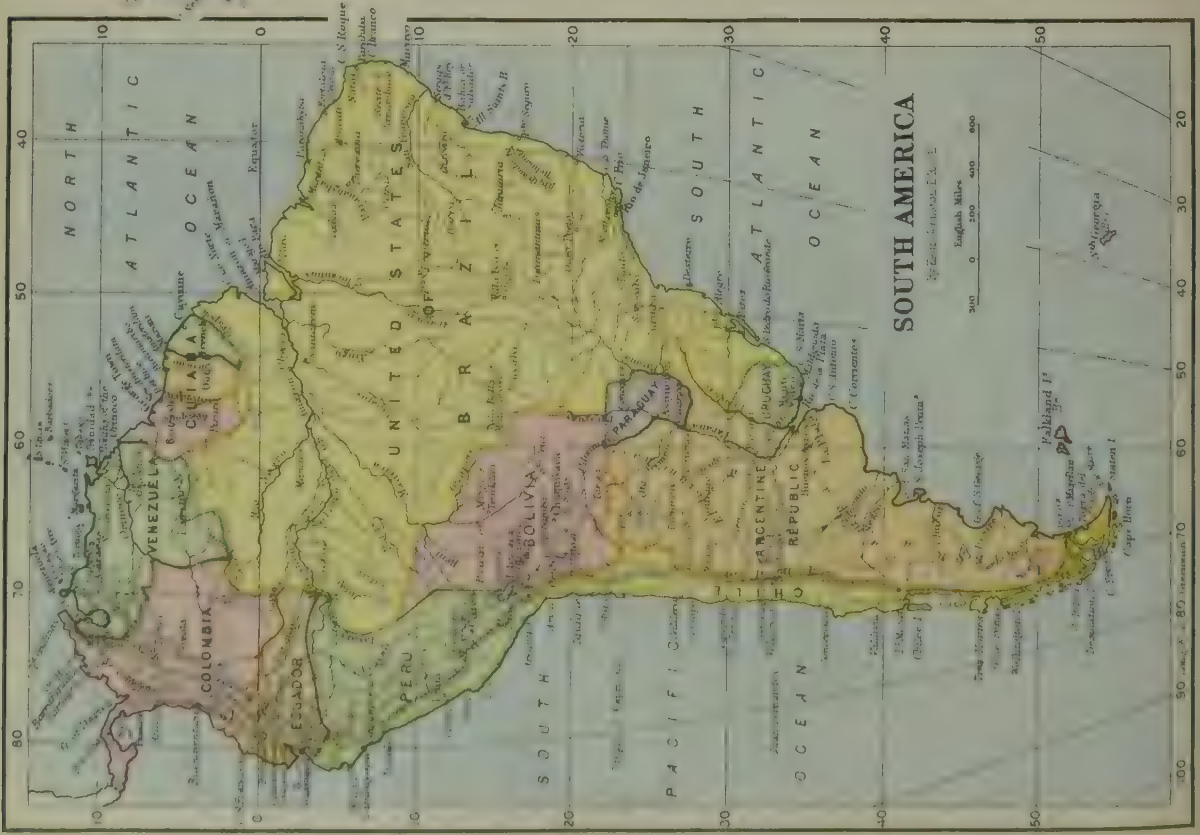
UNITED STATES & MEXICO

By Keith Johnston, F.R.S.E.

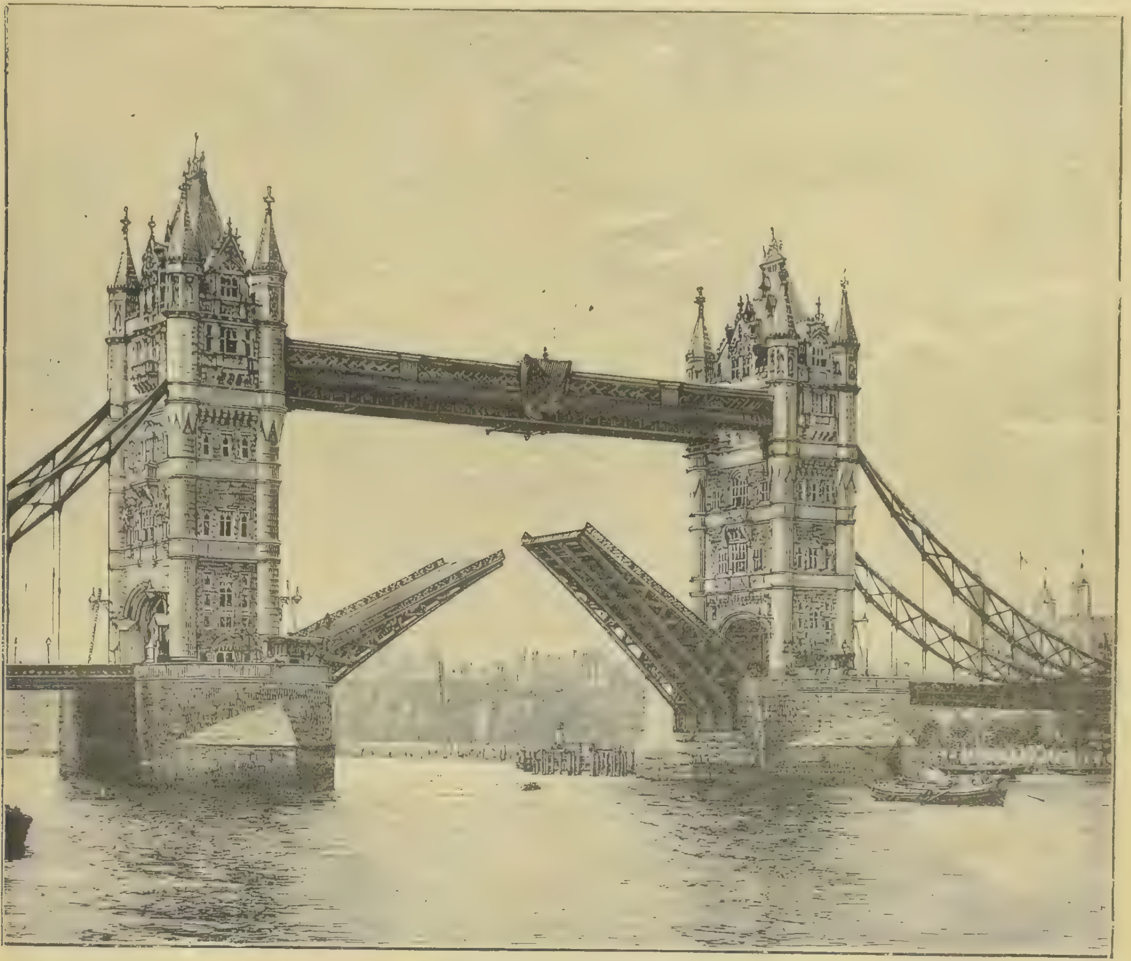

BRITISH NORTH AMERICA.
Scale of English Miles
GREENLAND
Hudson Bay
ATLANTIC OCEAN
NORTH PACIFIC OCEAN
BRITISH COLUMBIA
UNITED STATES
Newfoundland
Quebec
Montreal
Ottawa
Halifax
Boston
Manitoba
Winnipeg
Lake Superior
Long. 100 W. of Green.


EASTERN PART OF THE DOMINION OF CANADA NEWFOUNDLAND &c.
By Keith Johnston, F.R.S.E.
English Miles
Railways thus
HUDSON BAY
James Bay
Labrador
DOMINION OF CANADA
QUEBEC
ONTARIO
LAKE SUPERIOR
LAKE HURON
L. MICHIGAN
LONTARIO
LAKE ERIE
NEWFOUNDLAND
GULF OF ST LAWRENCE
NEW BRUNSWICK
NOVA SCOTIA
Cape Breton
NORTH ATLANTIC OCEAN
UNITED STATES
QUEBEC
Longitude West 65 of Greenwich


NORTH AMERICA
& West Indies
by Keith Johnston F.R.S.E.
English Miles
100 0 200 400 600 800
Principal Railways
110 Longitude West 100 of Greenwich
Continuation of W. Indies
ARCTIC OCEAN
GREENLAND
BAFFIN BAY
DAVIS STRAIT
HUDSON BAY
DOMINION OF CANADA
ALASKA
UNITED STATES
MEXICO
GULF of MEXICO
WEST INDIA ISLANDS
CARIBBEAN SEA
CENTRAL AMERICA
NORTH ATLANTIC OCEAN
NORTH PACIFIC OCEAN
TEXAS
CALIFORNIA
FLORIDA


SOUTH AMERICA
English Miles
200 0 200 400 600
80 Greenwich 70
NORTH ATLANTIC OCEAN
SOUTH ATLANTIC OCEAN
SOUTH PACIFIC OCEAN
Equator
VENEZUELA
COLOMBIA
GUIANA
ECUADOR
PERU
BOLIVIA
UNITED STATES OF BRAZIL
PARAGUAY
URUGUAY
ARGENTINE REPUBLIC
CHILE
Falkland Is
Cape Horn
S. Georgia

A COMPLETE ATLAS OF THE WORLD.



THE TOWER BRIDGE.

We all know that the world we live in is called the earth,—that we walk, ride, and sail on the surface, or outside, of the earth—that the streets, roads, fields, rivers, and lakes are parts of the earth's surface—that birds fly above it and fishes swim below it—and that it is composed of land and water.

Land and water compose the earth's surface in the proportion of one-fourth land to three-fourths water.

On the land grow grass, plants, and trees, from which, either directly or indirectly, many kinds of animals and different races of people obtain their food, and without which no form of animal life could exist on the earth.

Grass, plants, and trees could not live without water. This is supplied in a very wonderful manner, from the water of the earth's surface.

The sun's heat evaporates a part of the water; that is, changes it into vapour, which rises in the air. The winds carry the vapour, or moisture, in the form of clouds, over the land. When this vapour enters air which is too cold, or unable to hold it, it is changed into drops and falls in the form of rain.

Land and water, air and winds, heat and cold are working together continually to make the earth fruitful and beautiful for the abode of mankind.

When you look downward you see the earth; but when you look upward, you see the sky and, perhaps, clouds floating in the air. Beyond the clouds and the air, you look into a region so vast that the mind is unable to form any idea of its immensity. The sun and stars are great bodies, which shine by their own light. The earth, moon, and other bodies, called *planets*, shine by light received from the sun.

If you could go from the earth to the moon the earth would appear to you there as the moon appears to you here, only much larger.

If you could reach the sun and see the earth this world would look to you like a small speck, or star, in the sky; and from whatever star you might visit you would see still other stars far beyond you and in every direction. This vast, boundless region, or space, is called the *heavens;* and the bodies we have mentioned are called *heavenly bodies.* Heavenly bodies resemble one another in their shapes, which are spherical, or globular. They differ greatly in size and in physical conditions. Some of them are yet hot, seething masses; others have a solid crust surrounding a heated interior; while others, still, having parted with their heat, are cold and solid from surface to centre. It is believed that each of these bodies is surrounded by an atmosphere, and that at least on one (Mars) besides the earth the land and water are separated from each other. The heavenly bodies are all in motion. The sun has several planets revolving around it, one of which is our world. Some of these planets are larger and some are smaller than the earth. Besides, some of these planets have other and smaller bodies revolving around them; these are called *moons.* The earth has one moon. This group of planets with their moons and the sun, around which they are constantly revolving, is called the *Solar System.*

The earth is a heavenly body which is constantly whirling around the sun, in a path, called its *orbit.*

Baltic Canal. The Bridge near Levensau.

THE EARTH—ITS FORM AND SIZE.

A sphere is a body bounded by a curved surface, every part of which is equally distant from a point within, called the centre. Half a sphere is a *hemisphere.* The diameter of a sphere is a straight line which extends through the centre of the sphere, and terminates at the surface. The axis of a sphere is the diameter on which the sphere spins, or rotates. The poles are the ends of this axis. An oblate spheroid is a spherical body flattened at the poles. The axis of an oblate spheroid is its shortest diameter.

The earth is an oblate spheroid. It differs but slightly, however, from a true sphere. The shape of the earth is such as a sphere or ball composed of wet clay, or other plastic material, would assume, if spun upon an axis. The velocity of rotation would cause the sphere to bulge at the Equator, and to shorten the axis. If this velocity should be increased, portions of the sphere would be thrown off. Many eminent scholars believe that the planets were once a part of the sun, and were fragments of it, hurled off into space.

That the earth is spherical in shape is proved in several ways. First, Vessels have sailed around it. Second, The shadow of the earth when it falls on the moon is always circular. Third, When a perfectly level line is surveyed across a lake or other body of water, it is found that the surface of the earth curves away from the line. Fourth, At the distance of one mile from the point where this line touches the earth, the curvature is about eight inches; at three miles it is six feet; and at five miles it is about sixteen feet. Fifth, When a vessel approaches an observer, the tops of the masts are first seen; then the sails and rigging; and, finally, the hull of the vessel.

The horizon is the limit beyond which we cannot see objects on the earth's surface. These objects are shut out because of the earth's roundness. This circle which thus limits our view is called the apparent horizon. The apparent horizon is best observed on the sea or on a level plain. The true horizon is an imaginary one used by astronomers. It is always parallel with the apparent horizon. Its plane divides the earth into two equal parts. A man standing on a level plain, or at the surface of the sea, is able to see the surface of the earth for about three miles in every direction. The circle around him, and distant from him, three miles, is his horizon. His horizon would be enlarged according to his height above the sea-level. The horizon of a sailor at the mast-head is greater than that seen from the deck of a vessel.

The equatorial diameter of the earth is nearly 8,000 miles. The axial, or polar diameter, is about twenty-six miles shorter than the equatorial. The diameter of the earth, measured from the Tropic of Cancer to the Tropic of Capricorn, may slighily exceed the equatorial diameter. The equatorial diameter is 7925·6; the axis, 7899·1. The circumference of the earth at the Equator is about 25,000 miles.

MOTIONS OF THE EARTH.

The motions of the earth are two—a daily and a yearly. The daily motion is the rotation of the earth on its axis. The time in which it makes a complete rotation is divided into twenty-four parts, called hours. The succession of day and night is caused by the rotation of the earth on its axis. The earth turns on its axis from west to east; but to an observer on the earth the sun appears to move around the earth from east to west, daily. The sun shines on one-half of the earth at a time, while the other half is in darkness. In the illuminated half, it is said to be day; in the dark half, night. As the earth turns on its axis it constantly brings a succession of places to light, and then carries them into the shadow. The time at which the sun first appears every morning on the horizon is called sunrise; the time at which it disappears below the horizon sunset. It is evident, therefore, that an observer east of a given place will see the sun at sunrise before an observer west of that place. For instance, it is sunrise several hours sooner at London than at New York. The yearly motion of the earth is its journey around the sun. While the earth makes a complete journey, or revolution, round the sun, it turns on its axis 365¼ times. The time in which this revolution is made is called a year. The path of the earth in its journey around the sun is called its orbit. In shape the orbit of the earth is an ellipse. The sun is not in the centre of the ellipse but near it. Hence the distance of the earth from the sun differs at different times. The earth is about 3,000,000 miles nearer the sun in December than in June.

DIRECTIONS, POSITIONS, MEASUREMENTS.

The direction in which the sun appears on the horizon in summer is east, or nearly so; at its setting it is west, or nearly so. With the right hand towards the east and the left hand towards the west, the face of the observer is towards the north; his back towards the south. These directions are called cardinal points; a direction midway between north and east is north-east; between north and west, north-west; between south and east, south-east; and between south and west, south-west. These directions are determined at sea by means of an instrument called the mariner's compass. This instrument consists of a magnetised bar of steel attached to a circular card on which the names of the cardinal points are printed. The needle and card are balanced on a pivot, and enclosed in a metallic box with a glass top. No matter which way the magnetised bar is turned, it always swings back and comes to rest in a direction nearly north and south. Shadows at noon in Great Britain fall toward the north. The position of places on the earth and their distances from one another are determined by means of lines supposed to be drawn upon its surface. On maps, or representations of the earth's surface, the lines are real, not imaginary; on the earth each line is the circumference of a circle, or a part of it. A circle is a figure bounded by a curved line, every part of which is equally distant from the centre. Every circle (or circumference) may be divided into 360 equal parts, called degrees, marked (°). Each degree may be divided into 60 minutes, marked (′). Each minute may be divided into 60 seconds, and marked (″). For instance, the expression 3° 20′ 28″ is read—3 degrees, 20 minutes, and 28 seconds. To distinguish these from minutes and seconds of time, the phrase of arc is employed. Thus, 30′ is read—30 minutes of arc. An arc is part of a circumference. There are 180° in one-half of a circumference, 90° in one-fourth, and 45° in one-eighth. The great circles of the earth are those which divide it into two equal parts called hemispheres. Small circles are those which divide it into two unequal parts. The Equator is a great circle midway between the North Pole and the South Pole. The Equator divides the earth into the Northern Hemisphere and the Southern Hemisphere. Parallels are small circles parallel to the Equator. Meridian circles are great circles that pass through the poles of the earth. Each meridian circle crosses the parallels at right angles. A meridian is one-half of a meridian circle. Meridians extend from pole to pole.

The position of a place on the earth's surface is given in terms of latitude and longitude.

Latitude is distance north or south of the Equator, expressed in degrees, minutes, and seconds. Places north of the Equator are said to be in north latitude; those south of the Equator, in south latitude. Latitude is reckoned from the Equator towards the poles. A place on the Equator is in lat. 0°; the latitude of the North Pole is 90° N.; of the South Pole, 90° S.

Longitude is distance east or west from a given meridian, expressed in degrees (°), minutes (′), and seconds (″). This given meridian is called a prime meridian. The prime meridian, adopted by nearly every nation, is the meridian passing through Greenwich, near London. Longitude is reckoned from 0°, the longitude of the Greenwich prime meridian, to 180°, or half-way around the earth. Places east of this meridian are in east longitude; those west of it, in west longitude. On maps of the hemispheres, the degrees of longitude are usually shown on the Equator. The length of a degree of longitude varies with the size of the parallels of latitude, from 0 at the poles, to 69·2 miles at the

Equator. The maps show the length of a degree of longitude, on different parallels.

The axis of the earth is not perpendicular to the plane of its orbit, but is inclined 23½° from the perpendicular. Therefore, when the North Pole leans towards the sun, the rays of the sun will illuminate the earth 23½° beyond the North Pole. The plane of the earth's orbit may be considered an imaginary surface on which the earth's orbit is drawn.

This limit of the sun's light marks the position of the Arctic Circle, called, also, the North Polar Circle. The rays of the sun are then vertical at noon, on the earth's surface, which is 23½° north of the Equator. This point shows the northern limit of places which may have a vertical sun, at noon, and marks the Tropic of Cancer. When, however, the earth has moved half-way around in its orbit, and the North Pole leans from the sun, the sun's rays extend 23½° beyond the South Pole, thus marking the position of the Antarctic, or South Polar Circle. The sun's rays are then vertical, at noon, at a point 23½° south of the Equator; this point shows the southern limit of places which may have a vertical sun, at noon, and marks the Tropic of Capricorn.

HAMMERFEST.

All places on the earth which are situated at the Tropic of Cancer have a vertical sun, at noon, once every year—June 21st. All places at the Tropic of Capricorn have a vertical sun at noon, once every year—about the 21st of December. All places between these tropics have a vertical sun at noon, twice every year. To an observer at the Equator, the sun is vertical, or directly overhead, at noon, on the 22nd of March; but on succeeding days, at noon, it appears to have moved a little northward. By the 21st of June, at noon, it is 23½° north of a point directly overhead. The sun goes no farther north, however, but turns and appears to move southward, so that on the 22nd of September it is again overhead, at noon; and on the 21st of December, 23½° south of a point overhead, after which it again turns northward.

The point at which the sun apparently turns back in its course, is called the tropic (from the Greek word, meaning to turn). The northern tropic is called Tropic of Cancer, because the sun appears to be in a group of stars, called Cancer; the southern tropic is named also from a constellation known as Capricorn.

To an observer at the North Pole, on the 22nd of March, the sun appears to travel around the horizon. Day by day it mounts a little higher, until on the 21st of June, it is 23½° above the horizon, each day sweeping in a circle around the sky. Then it gradually sinks lower and lower during succeeding days, until on the 22nd of September, it again skims the horizon, and soon sinks below it, and thus disappears for six months. By the 21st of December, it is 23½° below the horizon. It then turns, and on the 22nd of March, the observer again sees the sun. It is evident, therefore, that the days and nights at the poles are each of six months duration.

The great circle on the earth where the sun is vertical at noon, every day in the year, is that which coincides with, or falls within, the earth's orbit. It is called the Ecliptic.

Change of Seasons.—The axis of the earth preserves a fixed, unvarying direction, or nearly so, as the earth journeys around the sun. Because of this, it is evident that a given locality will receive the rays of the sun more directly at one part of the year than at another, thereby causing successive changes of seasons.

Zones.—Zones are belts into which the surface of the earth is divided by astronomical circles. They are parallel to the Equator. The torrid, or hot zone is situated between the Tropic of Cancer and the Tropic of Capricorn. It extends 23½° on each side of the Equator; its width is 47°. The Temperate Zones lie between the tropics and the polar circles. The North Temperate Zone is north of the Tropic of Cancer; the South Temperate Zone, south of the Tropic of Capricorn. Each temperate zone is 43° in width. The width of the temperate zones may be easily calculated. From either pole to the Equator, the distance is 90°. From either pole to its polar circle, the distance is 23½°; and from the Equator to either tropic 23½°. Therefore, 90° less twice 23½°, or 47°, equals 43°, the width of either temperate zone. The frigid, or cold zones are situated within the polar circles. They are not belts, like the other zones, but circular portions of the earth's surface. Each has a pole for its centre, and a polar circle for its circumference, or boundary. Each extends 23½° from the pole which it surrounds; consequently, the diameter of each is 47°.

THE LAND.

The earth's surface contains about 197,000,000 square miles. Of this area a little more than one-fourth (53,000,000 square miles) is land, and three-fourths (144,000,000 square miles) is water. Most of the land is situated in the Northern Hemisphere. According to form, the land surface consists of continents, islands, peninsulas, capes, and isthmuses. According to elevation, it is subdivided into mountains, plateaus, or table-lands, plains, and valleys.

NAPLES AND VESUVIUS.

A continent is the largest natural division of land. There are three continents, namely: the Eastern, the Western, and the Australian continent. Each grand division of land is also called a continent. Each of the grand divisions, or continents, has, more or less, the shape of a triangle,—broad at the north and tapering to a point at the south. Europe has one mile of coast for every 190 square miles of area, while Africa has but one mile of coast for every 500 miles of area. Indentations of coast temper the climate of a country and by creating good harbours, aid its commercial prosperity.

An island is a body of land surrounded by water. A group of islands is often called an archipelago. Reefs are long, narrow islands parallel to a coast. Keys are ledges of rocks near the surface of the water, or islands rising a little above the surface of the water. Spits are islands covered with water at high tide. The chains of islands which are near and parallel to the coasts of continents, are partly submerged mountain ranges. The Japan, Kooril, and Philippine Islands form such a range; the Aleutian Islands are an extension of the Rocky Mountain system. Between the islands and the coast of the continent, the waters are shallow; but on the seaward side of the chain, the bed of the ocean slopes abruptly to a great depth. Coral islands are limestone reefs, formed from the skeletons of the coral polyps. The coral island is usually an irregular ring of land broken in several places. Sometimes there is a volcanic mountain in the centre of the island, but oftener, a shallow lake. This ringed-shaped island is called an atoll; the lake, a lagoon.

A peninsula is a body of land nearly surrounded by water. A peninsula projects from, or is connected with, a larger body of land, called the mainland.

A cape is a point of land extending into the water. Headlands and promontories are high capes. Other names for capes are point, head, naze (nose); horn, mull and bill are sometimes employed.

An isthmus is a neck, or narrow strip, of land which connects two larger bodies of land.

A coast is that part of the land which borders on a large body of water.

A mountain is a high elevation of land. A peak is the top of a hill, or a single mountain ending in a point. A butte is a name given to an isolated peak in the western part of North America. In Scotland, the word "ben" signifies a mountain. A hill is an elevation of land, not so high as a mountain.

A mountain range is a fold, or wrinkle, in the earth's crust, having great breadth and elevation. If the summit of the mountain range be irregular and notched in appearance, the name sierra (a Spanish word meaning saw) is prefixed to the name of the range; as, Sierra Nevada Mountains.

A mountain chain is a series of two or more ranges which seem to be extensions one of another.

A mountain system is a collection of ranges and chains, lying near one another. Thus the numerous ranges and chains of the western highlands of North America form the Rocky Mountain system; those along the eastern coast of the United States, the Appalachian system. The principal mountain system of a continent extends in the direction of its greatest length. The ranges which compose a mountain system are usually parallel to one another. Often, the parallel ranges are connected by short, cross ranges, or "spurs," thus inclosing basins, or "parks." Mountains affect the climate of a country. Their snow-clad summits act as condensers, cooling the air, and sending down the moisture from the clouds, and thereby insuring an abundance of rain to a country that would otherwise be dry and barren.

The principal mountain system of a continent is called its main axis. Thus the Andean System is the main axis of South America.

The height of a mountain is the distance of its summit above the level of the sea, on a vertical line. The height of a mountain may be found either by ascertaining the temperature of water when it boils on the summit of the mountain, or by observing the height of the mercury in a barometer. In the former case, the boiling point of water, which is 212° Fahr. at the level of the sea, is one degree less for about every 533 feet of ascent. By the latter method, the mercury in the barometer lowers a tenth of an inch for about every ninety feet of ascent above the sea-level.

The base, or foot, of a mountain is its lowest part; the summit is the highest part; the crest of a range is the ridge from which the two slopes descend; the trend of a range is its general direction. A pass is a break, opening, or narrow road, or way, crossing a mountain chain.

A plateau, or table-land, is a large area of land having a considerable elevation. A mesa is an elevated table-land lying against the side of a mountain. Plateaus are not always level highlands; they are usually rugged and mountainous.

A plain is a large tract of land, nearly or quite level. The plains of the Mississippi Valley are called prairies; those of South America llanos, pampas, and selvas; of Russia and Siberia, steppes. The marshy, mossy plains of Northern Siberia, bordering the Arctic Ocean, are called tundras. Prairies, pampas, llanos, and steppes are generally treeless plains. They have a great depth of soil, and are often extremely fertile. Such plains, before they are cultivated, are nearly always covered with wild grasses.

A valley, or basin, is a tract of land partly or wholly surrounded by highlands. The narrow strip of land through which a river flows, is also called its valley.

A desert is a tract of land which is unproductive for want of sufficient moisture. Deserts are generally level, but sometimes their surface is hilly, or mountainous. Their soil is usually sandy.

An oasis is a fertile spot in a desert. An oasis is generally underlaid by a basin-shaped stratum of clay, or of limestone. This holds the water that finds its way from surrounding highlands.

A volcano is an opening in the earth's crust, through which lava, or molten rock, steam, and various gases are forced. The solid substances ejected, collect about the volcanic opening and build up a conical mountain. Most of the volcanoes of the earth are situated in mountain ranges, and are near the sea-coast. A chain of volcanoes extends along the entire coast that partly incloses the Pacific Ocean. The crater of a volcano is the cup-shaped depression, or hollow, at its top. Volcanic craters vary from a few rods to several miles in diameter. The cause of volcanic eruptions is usually considered to be the sudden formation of steam from the water that finds its way to heated portions of the earth's interior. A few volcanoes are constantly active, that is, emitting steam and lava. Their eruptions, however, are not marked by great violence. Stromboli, in the Mediterranean Sea, is a volcano of this class. Others remain inactive for centuries, and then burst into most violent activity. Vesuvius, near the city of Naples, in Italy, is a type of this class. An extinct volcano is one from which all signs of volcanic activity have disappeared. Nearly every coral island of Polynesia marks the site of a sunken, volcanic mountain. There are now more than 1,000 volcanoes having well-defined craters. Of this number 350 are active.

Earthquakes are tremblings, or vibrations, of a part of the earth's crust. They are sometimes due to volcanic action, being most frequent in volcanic regions and along the more recently formed mountain ranges. Such earthquakes are probably due to the same forces that cause volcanic eruptions. Earthquakes are, in many instances, caused by gradual shrinkage of the earth, in cooling. Sometimes they are caused by pressure of the air, or the water. Gradual changes of level in the earth's crust may take place without perceptible violence. The eastern coast of Greenland is sinking; the northern parts of Norway and Sweden are rising; the southern part of Florida is sinking; so is the bed of the ocean in the region of Oceania.

THE OCEAN, OR SEA, AND ITS DIVISIONS.

The waters of the earth form an irregular but continuous body, called the ocean, or sea. Ocean waters are comprised in five grand divisions, each of which is called an ocean. These divisions are the Pacific, Atlantic, Indian, Antarctic, and Arctic Oceans. The Pacific Ocean has an area nearly equal to that of all the other oceans. It is partly inclosed by the Eastern Continent on the west, and the Western Continent on the east. The Atlantic Ocean is between the Eastern Continent on the east, and the Western Continent on the west. The Indian Ocean is partly inclosed by Africa, Asia, and Australia. The Antarctic Ocean surrounds the South Pole, and the Arctic Ocean surrounds the North Pole. Much of their surface is covered with ice throughout the year. The arms and passages of the ocean are called seas, gulfs, bays, straits, channels, and sounds.

A sea is a body of water nearly or quite surrounded by land. A gulf or bay, is a body of water extending into the land. A bight is an open bay; a firth, frith, fiord or inlet, is a small bay usually having steep shores. A roadstead is an open place where vessels may anchor at some distance from the shore. A harbour or haven, is a small sheltered inlet where vessels may anchor. A strait or channel, is a narrow passage of water connecting two larger portions of water. Minch and belt are also used to designate narrow passages of water. A sound is a shallow channel or bay. Shoals and banks are shallow parts of the sea. The bed of the ocean, although diversified by plateaus and plains, is more nearly level than the surface of the land. The average depth of the Pacific, Atlantic, and Indian Oceans is about 16,000 feet. The depth of the Antarctic is probably somewhat less. The Arctic Ocean and all land-locked arms of the sea are much shallower. The deepest soundings attained are off the eastern coasts of the continents. East of the Kooril Islands, a sounding of 27,930 feet, and south-east of Newfoundland, one of 27,480 feet have been made. The Gulf of Mexico and the Mediterranean Sea do not exceed 12,000 feet in their deepest parts. The Red Sea is about 3,000 feet deep; the Baltic and North Seas about 600 feet, and Behring Sea about 200 feet deep. The colour of the ocean varies. Shallow waters are green, while water more than 60 fathoms deep is blue. Fresher waters are usually of a pale green, while those containing a larger percentage of mineral salts are blue. Ocean currents contain an average of 3½ per cent. of mineral salts, of which common salt is the principal. These salts are derived from the earth, and much of them has been conveyed to the ocean, by rivers. The proportion of salt varies. In parts of the Arctic Ocean, it is sometimes less than 1 per cent.; in the Baltic Sea about 2 per cent.; in the Red Sea, however, where the evaporation is enormous, there are 4·3 lbs. of salt in every 100 of water. Carbonate of lime, necessary for shell-fish, is also carried into the ocean by rivers. The temperature of the ocean, at the surface, varies according to latitude. In equatorial regions, it is about 80° Fahr.; in polar regions about 28° Fahr. The temperature at the bottom, except where influenced by ocean currents, varies but little from 35° Fahr.

Waves Breaking on Rock-bound Coast.

WAVES, TIDES AND CURRENTS.

Waves are the alternate rising and falling of swells or ridges of water. They are caused by the wind. The wave itself moves forward, but the water does not; its only motion is its alternate rise and fall. The top of a wave in shallow water, or during a gale, moves faster than its lower part. This causes the top of the wave to roll forward and break into surf or foam. The ordinary waves of the North Atlantic are about ten feet in height from crest to trough. Waves are seldom more than fifty feet in height. Tides are waves which, in mid-ocean, are about three feet in height, and several thousand miles in breadth. Tides are caused by the attractive forces of the sun and moon. There are two tide-waves every day, producing two flood-tides and two ebb-tides. When the sun and the moon exert their attraction in the same line or direction, the tides rise a little higher, and fall lower, than usual. Such are called spring-tides. But when the forces are at right angles, the water neither rises so high, nor falls so low, as usual; such are called neap-tides. Flood-tide is the rising of the water for six hours; ebb-tide is its falling during the next six hours. The tide-waves along the coast of North America and Europe have an average height of four or five feet. In V-shaped narrow passages which face the tide-wave, the water is piled up, because it cannot spread out. The water rushes into the passage with a terrific roar. The bore or egre, as such waves are called, is often a war-like wave, twenty feet in height, moving with the velocity of a railway train.

Ocean currents are streams of water flowing in the sea. They differ from the adjacent waters in temperature and colour. Ocean currents are caused by the heat of the sun, and the rotation of the earth. When water is heated, its bulk is increased. If water at 32° Fahr., which just fills a vessel, be heated, it will expand, and some of the water run over. This occurs in the ocean. The water in tropical regions becomes heated, and its bulk being thereby increased, the water flows toward the polar regions. The cold, polar waters, which are correspondingly heavier, flow as under-currents toward the Equator. Their direction is governed by the winds, the earth's rotation, and the form of the continents. As modified by the winds and the earth's rotation, the general directions of under-currents are:—In equatorial regions, a steady flow of water westward, forming the equatorial current. In temperate latitudes, a general movement eastward. The velocity of the equatorial current is about ten miles a day.

The Gulf Stream is the principal current of the Atlantic Ocean. It is deflected from the equatorial current in the Caribbean Sea. The greatest velocity of the Gulf Stream is where it passes through Florida Strait. Here its velocity is nearly five miles an hour, and its temperature about 80° Fahr. Towards the north-east, its waters spread out and form an immense drift along the western coast of Europe. The winds, blowing over this drift, become warmed; and, in turn, impart their heat to the lands over which they blow.

The Kuro Siwo, or Japan current, is the principal current of the North Pacific Ocean. The prevailing winds spread its waters in an immense drift along the western coast of North America.

The Arctic currents are cold currents. Two of them issue from the Arctic Ocean one along the eastern coast of Greenland; the other, along the western.

WATERS OF THE ATMOSPHERE.

The heat of the sun causes water to take the form of vapour. In this form it mingles freely with the air. The amount of vapour which the air can contain depends upon the temperature of the latter. Warm air will hold much more than cold air. When the air contains all the moisture it can hold at a certain temperature, it is said to be saturated, or at the dew point. Water may be in three forms—solid, liquid, or gaseous. Heat changes ice to water, and water to vapour, or to steam. Air takes up, or absorbs a large quantity of the vapour of water, the amount depending on the temperature of the air. A cubic foot at 32° Fahr. will hold a little more than 2 grains of water in the form of vapour. At 50°, it will hold 4 grains; at 70° 8 grains; and at 90° it will contain nearly 15 grains. Hence, if air at 90°, which is saturated with moisture, be cooled to 70°, it will deposit all of the moisture in excess of 8 grains to the cubic foot. If the air be cooled below the point of saturation, a part of the vapour is condensed, and becomes dew, fog, clouds, rain, snow, or hail. Dew is the moisture deposited on clear nights, when the air becomes chilled below the point of saturation. Dew may be deposited on any body that cools the surrounding air below the point of saturation. This is shown by the drops which form on the outside of a pitcher filled with iced water. When dew does not form, it is usually because the air contains no more moisture than it can hold, at the lowest temperature, during the night. A strong wind may prevent the formation of dew, because none of the air remains in contact with the ground long enough to be cooled below the point of saturation.

Fog is partly condensed vapour, floating in the air near the earth's surface.

Clouds are partly condensed vapour, high in the air. They are usually between layers of air which differ in temperature. Clouds may be considered floating cisterns, or reservoirs of water, which the air holds and carries, that it may supply rain, or dew, to the dry land. Clouds are classified according to their forms. The cirrus, or feather clouds, are the light, fleecy clouds sometimes called "cat-tails" or "mackerel" clouds. Cumulus clouds are those which appear to be heaped, or piled up, in masses. Stratus clouds appear to be arranged in long, flat layers. The nimbus, or storm-cloud, is shapeless and overcasts the sky. The lower part of the nimbus consists of rain drops; the central portion of mist; and the upper of cloud-mist. The vapour in the atmosphere acts as a screen, intercepting the fierce heat of the sun during the day, and preventing its escape at night.

Rain is the cooled vapour which falls in drops, when the moisture of the air is rapidly condensed. More rain falls in the Torrid Zone than in any other part of the world; and more falls on the coasts of continents than in the interior. Eastern coasts in the Torrid Zone, and western coasts in the temperate zones, receive more rain than other regions, because they face the rain-bearing winds. Many countries whose coasts face the south, receive copious rains from the periodical winds. India, and other parts of Southern Asia, are notable examples.

Snow is vapour which passes into a solid form before the moisture can collect in drops. Snow-flakes are crystals of wonderful symmetry and beauty. Each is a crystal having six angles or sides, and each angle is 60°, or some multiple of 60. If the temperature be above 20° Fahr., or if the wind blow, the crystals are apt to be imperfect. They form to best advantage when the air is perfectly still, and the temperature below 20° Fahr.

Hail is frozen rain. It is thought that hail is formed at great heights, and that the rain drops are frozen while passing through a layer, or body of cold air.

THE WATERS OF THE CONTINENTS.

The water that rises from the sea in the form of vapour, is carried away by the winds, and falls on the continents in the form of rain and snow. A portion of the water evaporates. In the cold regions of the Arctic slope, nearly all of the rain finds its way back to the ocean. In the steppe regions of the Torrid Zone, the water is removed only by evaporation. A part of the water sinks into porous ground; the rest evaporates, or else flows back to the sea. A spring is a stream of water which issues from the earth, or from some underground reservoir in which rain-water has collected. The rain-water, in passing through the porous rocks and soil, often dissolves the soluble mineral salts, such as common salt, soda, etc., and retains them. Such water forms mineral springs. Calcareous springs are those which contain carbonate of lime; soda springs contain salts of sodium, or else potassium; chalybeate springs hold salts of iron in solution; sulphur springs contain hydrogen sulphide (sulphuretted hydrogen); acidulous springs hold carbon dioxide (carbonic acid gas) in solution. Seltzer, Vichy and Congress waters come from springs of this class in many parts of the world, notably in California and in the Caspian Sea Basin, are springs of petroleum, and asphaltum, or mineral pitch. The island of Trinidad contains a large lake of this character. Spring waters often become warm or hot, by contact with heated volcanic rocks which surround the reservoir, or from the chemical decomposition of rocks. In this manner hot springs are formed. The temperature of spring water is usually about 50° or 60° Fahr.; but the water of some springs is hot, and even boiling. Nearly all hot springs are in volcanic regions, and the majority of them are mineral springs. The celebrated mineral springs of Saratoga, in New York, and Seltzer, in Germany, are cold.

A geyser is a hot, mineral spring, from the channel of which jets of hot water and steam are forced high into the air at regular intervals. They are, in many instances, considered a form of volcanic action. The spouting of geysers is due to the formation of steam, deep in the channel of the spring.

A river is a large stream of water flowing in a channel on the surface of the land. The water from so much of the rain and melting snow as does not sink into crevices and porous ground, flows first in rills, or rivulets, brooks and creeks. These small streams form larger streams, which unite to make a river, and the waters are again borne to the ocean, whence they came.

The channel in which a river, or other stream of water, flows is its bed. A cañon, gorge, ravine, or gulch is a channel or river-bed having steep, or precipitous sides. A river may be considered as having three parts. In its upper course the water, having great velocity, is constantly cutting its channel deeper and wider. In its middle course, the velocity is still sufficient to carry coarser sediment, but not great enough to wear its channel perceptibly. In its lower course it deposits the sediment brought from its upper channel; and inasmuch as it cannot carry this sediment it must flow around it. As the river is constantly building its bed higher and higher by the sediment thus brought down, it is frequently necessary to build dykes, or levees, along the banks of the river in order to protect the surrounding land from overflows during seasons of high water. The source of a stream is the place where it begins; the mouth is the place where its waters flow into another stream or a lake or other body of water. Up a river is towards its source; down a river towards its mouth. The right bank is on the right hand in descending the river; the left bank on the left hand.

THE ORIGIN OF AN ICEBERG.

A river system is a river with all its tributaries or branches. A river basin is the land that is drained by a river and its branches. A divide, or watershed, is a ridge, or height of land, that separates river basins. It is usually a range of hills or mountains; sometimes, however, it is only a slight undulation in a plain. The delta of a river is the land formed of the sediment which the river deposits at its mouth, and along its lower course. An estuary is the wide mouth of a river which faces the tide. Wherever a river descends abruptly from a higher to a lower level, it forms rapids, or cascades, cataracts, or waterfalls.

A lake is a body of water surrounded by land, or situated in a depression of the land. If the water collects in the depression more rapidly than it evaporates and sinks, it overflows and becomes the source of a river. Lakes are natural basins in which the rainfall exceeds the evaporation. The water collects until it overflows the rim at its lowest place. Otherwise the water spreads out until its surface is so great that the amount received just equals the amount evaporated. The basin of a lake is the depression in which the water collects. The waters of lakes which overflow their basin, or discharge their waters, are always fresh; lakes having no outlets are usually salt. The saltness of lakes having no outlets is due to the mineral salts which are dissolved from the soil by the stream and carried by them into the lakes. As the water of such lakes escapes only by evaporation, the salt remains in them, and, therefore, constantly accumulates; but, where a lake has an outlet, the salt escapes to the ocean, and the lake remains fresh. Lakes are sometimes called lochs, or loughs. Small lakes are called ponds.

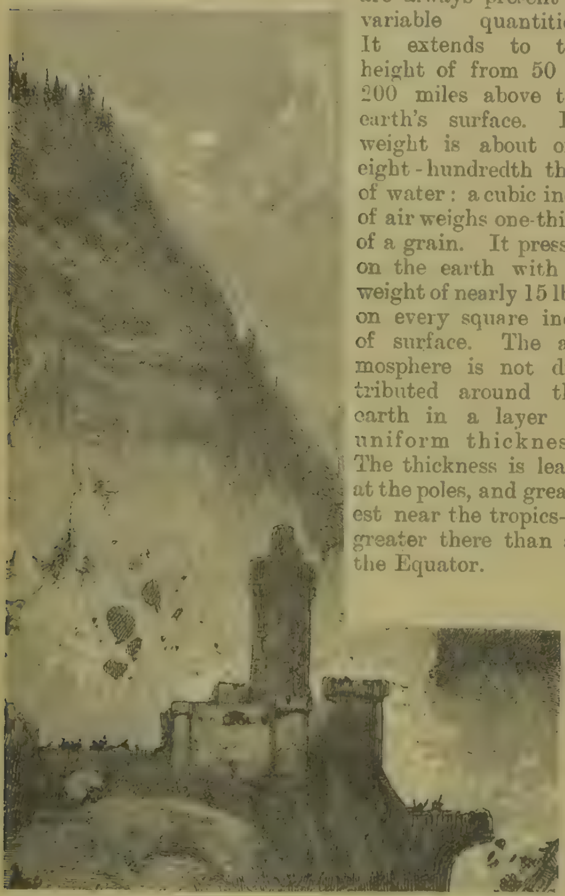
A glacier is an immense mass of ice and snow, which moves slowly down mountain slopes. Glaciers are formed from snow collecting in the ravines. This snow is changed to ice by the pressure of its own weight. Glaciers have their origin in regions of perpetual snow, and seldom extend below the snow line. Glaciers are rivers of ice. Their current is swiftest in the centre of the surface, and slowest at the sides and bottom. The velocity of glaciers varies from a few inches to several hundred feet a year, being governed by the temperature and depth of the ice, and the steepness of the slope. The glacier is seamed with crevasses, which extend across it. On the sides are rocks and débris which roll down the mountain slopes, and lodge at the edge of the glacier; these are called moraines. The lower end of the glacier usually pushes a large mass of rocks and débris ahead of it. This is the terminal moraine.

Icebergs are large masses of floating ice. They are usually broken from polar glaciers which terminate at the sea-coast. From one-eighth to one-tenth of an iceberg is above water; the remainder is below it. Icebergs seldom exceed two or three hundred feet in height, above the surface of the water.

An avalanche is a mass of snow, which, loosened by its own weight, dashes down the slope of a mountain, sometimes burying whole villages under great quantities of snow, rocks, and gravel.

THE ATMOSPHERE—WINDS, STORMS.

The air or atmosphere which surrounds the earth is an invisible gas. The air is composed of nitrogen and oxygen. Carbon dioxide and the vapour of water are always present in variable quantities. It extends to the height of from 50 to 200 miles above the earth's surface. Its weight is about one eight-hundredth that of water: a cubic inch of air weighs one-third of a grain. It presses on the earth with a weight of nearly 15 lbs. on every square inch of surface. The atmosphere is not distributed around the earth in a layer of uniform thickness. The thickness is least at the poles, and greatest near the tropics—greater there than at the Equator.



AN AVALANCHE.

A barometer is an instrument for measuring the weight of the atmosphere. The weight of the air varies with elevation, and hence the barometer is often employed to determine the elevation of mountains.

Wind is air in motion. It is caused by the heat of the sun. When air is heated, its bulk increases, and it, therefore, rises. The warm air rises, and cold air rushes in at the surface, to take its place, thus producing wind. The earth's surface receives the most heat near the Equator; and, at that place, the atmosphere, being greatly warmed, rises. The colder air which rushes in to take its place constitutes the trade-winds. The direction of winds is greatly modified by the rotation of the earth. In temperate latitudes, the prevailing direction is to the east; and in intertropical latitudes, toward the west. The trade-winds blow south-west in the northern hemisphere, and north-west in the southern hemisphere. The anti-trade-winds blow in opposite directions, toward the north-east in the North Temperate Zone, and toward the south-east in the South Temperate Zone. These winds are also called variables, as they are less constant than the trade-winds. Indeed, a large part of the time, they blow in an opposite direction, and correspond with the trade-winds.

Monsoons are winds which blow in a certain direction during half the year, and in an opposite direction the remaining half. They prevail on the western coasts of continents in the temperate zones. Variable winds are those which occur, chiefly, in the interior of continents. They are irregular, and are due to local causes.

The calm belts are narrow zones, or belts, within which there is little or no wind. The calm belts are confined, chiefly, to the ocean, and seldom extend to any great distance within the coasts of the continent. They move north and south, following the apparent motion of the sun. The equatorial calm belt never passes south of the Equator. Calm belts are, by some scientists, regarded as regions of ascending or of descending currents of air. The equatorial calms are situated near the Equator: the calms of Cancer, about 30° north, and the calms of Capricorn, about 30° south of it. Regular and constant winds seldom occur in the interior of continents. In such regions, the winds are local, and are caused by the unequal heating of different parts of the earth. Local winds are peculiar to each physical region. Thus, the sirocco and the simoon are confined to desert regions. Both are hot and very dry winds. The blizzard is the terrific, cold wind of the plains and prairies. The harmattan is the storm-wind of the West African coast.

Land and sea breezes are confined to coast regions. During the daytime the air above the land, receiving more heat than the air above the water, rises. The cooler wind from the sea then blows towards the land to take its place. At night the conditions are reversed, and the wind blows towards the sea.

Storms are usually caused by the rapid rising of heated air. As the column of air rises it parts with much of its heat. As soon as it is cooled below the dew point the moisture in it is condensed and falls as rain. The locality in which the rise of heated air occurs is called the area of low barometer, or storm centre. The wind blows from all directions towards this centre. Sometimes the ascending column covers a small area only. In such cases it usually acquires a rapid whirl, and becomes exceedingly destructive. Cyclones, whirlwinds, tornadoes, and typhoons are whirling storms of this character. The directions in which they usually travel are toward the west in equatorial latitudes, and toward the east in temperate latitudes. Sometimes the whirl is so rapid that a vacuum is formed at the centre. The vacuum is the funnel-cloud of the tornado and the eye of the cyclone. When such a storm occurs at sea water is forced into this vacuous centre, thereby forming a waterspout. The whirl of these storms is from east to west in the Northern and from west to east in the Southern Hemisphere.

Thunderstorms are electrical phenomena. They are thought to be due to clouds which are more highly charged with electricity than other clouds, or the earth.

Lightning is the electricity which passes from a cloud to the earth, from the earth to a cloud, or from one cloud to another. The sudden disturbance of the air gives rise to the noise, known as thunder.

The aurora borealis, or northern lights, is also an electrical phenomenon, the cause of which is not well known. It is seen with greatest frequency in Arctic regions.

A mirage is often formed when two layers of air of differing density rest quietly, one on the other, near the surface of the earth. The surface where the two layers touch each other, acts the part of a mirror, thus producing the reflection which appears to be a double image. The mirage is seen, chiefly, on level and rainless plains. The eye of the observer must not be at the same level as the surface of the reflecting layer of air. A mirage of the desert is never more than a foot or two above the surface of the ground. It looks like a distant body of water, merely because each layer of air reflects light in the same manner as the surface of water does. On almost any sultry, summer afternoon, a mirage may be seen over Lake Michigan, at Chicago. From the dome of Dearborn Observatory, the shipping and the tunnel-crib may be seen inverted in the air. In this case, the reflecting surface is above the eye of the observer.

CLIMATE.

Climate is the condition of a region with respect to its heat and moisture. It is modified, chiefly, by latitude, or distance from the equator; inclination of the earth's axis; height above sea-level; winds; and by proximity to the sea.

Modifications of climate are due to many other causes; among them are the following: Places near the sea-coast have a more even temperature than those in the interior of continents. In Monte Carlo the average winter temperature is only a few degrees lower than that of summer; in St. Petersburg the variation is about 70°. The tops of mountain ranges sometimes reach above the rain-bearing winds; and, while one slope may be deluged with rain, the other may be destitute of it. In all regions over which sea-winds blow, the rainfall is more or less periodical; in those localities where land-winds prevail, rain occurs at irregular intervals. Warm, ocean currents such as the Gulf Stream and the Kuro Siwo, send their waters into high latitudes, where they spread out over large areas. The warm waters give their heat to the winds, which, in turn, impart warmth to the land.

Latitude modifies the temperature of a place. In the Torrid Zone, the sun's rays are vertical, and give their heat directly to the earth. In polar regions, the rays fall obliquely and, therefore, part with much less of their heat. From the Equator towards the frigid zones, the heat gradually decreases, until the climate becomes one of perpetual snow and ice.

The change of seasons is caused by the revolution of the earth around the sun, and the inclination of the earth's axis, which always leans in the same direction. In the Torrid Zone, these seasons, or periods, are known as the rainy and the dry season. In temperate zones, these changes are chiefly those of temperature. The successive seasons are called spring, summer, autumn, and winter. The seasons of the frigid zones are modifications of both light and temperature. They consist of day, or summer, of six months, succeeded by a night, or winter, also of six months.

Altitude, also, modifies temperature. As the height above the sea-level increases, the air becomes cooler, about one degree for each 183 feet. In the tropics, at the height of about 16,000 feet and upwards, there is perpetual snow. From this limit, the heat gradually increases towards the level of the sea. On a high mountain in the Torrid Zone, almost any degree of temperature may be found.

Winds modify climate, with respect both to temperature and moisture. The latent heat of water is also an important factor. When water is changed to vapour, it absorbs a vast amount of heat, every pound of water containing enough to raise the temperature of 5·37 pounds of water from the freezing to the boiling point. The vapour is carried by the winds to higher latitudes, where it is condensed, and falls as rain. With the condensation of the vapour, this heat is set free. In the meantime, it has been transferred to colder regions. Thus it will be seen, that winds, more than any other agents in nature, serve to equalise extremes of temperature and moisture, by transferring moisture to the rainless, and heat to the colder regions. In the Torrid Zone, the moisture-bearing winds are from the north-east and the south-east, and the regions over which they blow receive copious rains. In the temperate zones, these winds are from the south-west and the north-west. They carry an abundance of heat and moisture far into the polar regions. The winter of the polar region is, by no means, one of intense darkness. The sun is never more than 47° below the horizon, and the greater part of the time it is within a few degrees of it. Hence, much of the time, there is a very strong twilight. Besides this long twilight, the aurora borealis appears like great bows, or arches, in the sky, giving a brilliancy to the long winter nights of the Arctic region seldom seen in temperate and tropical regions.

Isothermal lines are drawn on the maps, through places having the same average temperature. The height of the snow-line decreases as latitude increases. In the temperate zones, it varies from 2,000 to 4,000 feet above the sea-level. In the frigid zones, it rapidly descends to it. Zones of climate are bounded by isothermal lines, and, hence, do not correspond exactly with astronomical zones, which are bounded by parallels of latitude.

THE MINERAL KINGDOM.

The three kingdoms of nature are the mineral, animal, and vegetable.

Minerals, in regard to their uses to mankind, comprise three classes,—force-producing minerals, industrial metals, and building stones.

Coal is the most abundant and valuable force-producing mineral. It is of vegetable origin, and has been found in nearly every country in the world, both in lowlands and highlands. The coal-fields of Great Britain are of great value. In many cases, beds of coal were formerly peat swamps. Peat is a species of moss, accumulated, in some places, to a thickness of 40 feet or more. These swamps, gradually sinking beneath the sea-level, became covered with sand and sediment, which were swept over them by the sea. The weight of the overlying strata pressed this vegetable matter into a flat layer or seam. This pressure, together with the heat generated by pressure and decomposition, converted the woody tissue into coal.

Iron is the most useful and widely diffused of the industrial metals. The commercial value of iron is merely the cost of labour in manufacturing it. A pound of pig-iron is worth, in commerce, about a halfpenny. A pound of steel hair-springs for watches is worth, perhaps, £5,000. The ores of iron are found in great abundance in mountain ranges, and especially in the United States.

Copper, which is of a reddish colour, is found in nearly all highland regions. It was the first metal used by man. The region around Lake Superior is celebrated for copper mining.

Zinc is a white metal, found principally in Europe and America. Copper, mixed with zinc, forms brass. Tin, alloyed with copper, to which zinc is sometimes added, forms bronze. Tin, alloyed with lead, forms pewter and solder. Tin is found in England, the Island of Banca, and in various parts of the United States. Lead is found in plains and highlands generally. Nickel, a metal having a lustre surpassing that of silver, is found in Pennsylvania, U.S., Sweden, Spain, and Germany. Salt is found in nearly every country in the world.

Gold and silver are converted into coin and manufactured into many articles, both useful and ornamental.

The precious stones include the diamond, ruby, sapphire, emerald, topaz, amethyst, and turquoise.

Granite and marble are formed from sediments, which, under great pressure, have been changed by the action of heat and water. Granite, which is of a greyish colour, is composed of three minerals,—mica, feldspar, and quartz. Fine statuary marble is found in Carrara, Italy. Much ornamental marble is found in the United States. The water of the rising tide may carry mud, or sediment, to the shore. While the water of the falling tide is receding, this sediment is deposited, and is baked, or hardened, by the sun. Each succeeding flood-tide deposits a layer, or stratum, of sediment, which, in turn, becomes hard. Sediments of the Rhine are now hardening into stone; and, on the coast of Florida, pulverised shells and corals are quickly cemented into hard rock. Rocks formed from sediment are called sedimentary rocks; and, as they are found in strata, they are called stratified rocks, as slate. Igneous rocks are those formed by the action of heat, as lava and trap rock. Aqueous rocks are those formed by the action of water, and are stratified. Rocks formed by the action of both heat and water are called metamorphic rocks, as granite and marble. Like gold, silver, and iron, they are found in mountain ranges.

Evening on the Alps.

THE VEGETABLE KINGDOM.

Plants contain cells, many of which are small tubes, through which their food is drawn. A plant is three-fourths water. Nearly all plants absorb their food by means of roots and rootlets, which penetrate the soil in which they grow. They require, also, heat, light, and moisture. Some of the lowest forms of plant life consist of a single cell. Their distribution is governed, chiefly, by conditions of heat and moisture—that is by climate. These conditions are best fulfilled in the Torrid Zone, and there, vegetation is most abundant. Tropical regions produce palms, spices, bamboo, rice, sugar-cane, and bread-fruit trees. In the Temperate Zones, these give place to grains, grasses, fruit-trees, and forests of pine, maple, and oak. In polar regions, these are, in turn, replaced by a few species of stunted shrubs, birches, and mosses.

Grasses are the most widely distributed of the various species of plant life useful to mankind. They are found in all latitudes; but they thrive best in temperate regions.

The grains, which are species of grass, are native to Asia; maize, or Indian corn, is native to America; and rice, to Madagascar. Elevation above the sea-level, or altitude, which affects temperature, also modifies the distribution of vegetation. From the sea-level in the Torrid Zone, upward to the limit of perpetual snow, there are belts of vegetation similar to those between tropical and polar regions. The zones of vegetation, like those of climates, have no sharply defined boundaries. They overlap one another; and are separated by isotherms. Desert regions are destitute of vegetation, because of the absence of moisture.

THE ANIMAL KINGDOM—MAN.

Animals, like plants, increase in the number of species, from the poles towards the Equator.

In polar regions, the land animals are distinguished by thick fur, such as the polar bear, musk ox, and reindeer; and the marine animals, by a thick covering of blubber, or fat. These comprise the seal, walrus, and whale.

The temperate zones are the home of animals most useful to man, such as the horse, ox, cow, sheep, and hog. Here, also, are the deer, bison, bear, and wolf.

The tropical regions contain large and powerful animals, such as the elephant, camel, hippopotamus, rhinoceros, lion, tiger, and jaguar; besides reptiles and monkeys.

Mankind comprises about one and a half billion (1,500,000,000) of people.

People are classified with respect to their social conditions, as savage, barbarous, half-civilised, and civilised, or enlightened.

Savages are people without written laws or political government. They are ignorant and superstitious, and live by hunting and fishing. Savages place but little value on human life. Those who live by hunting are generally of a higher type than those who exist by fishing. The greater difficulties in procuring food, develop courage, skill, and the reasoning faculties.

Barbarous people live, chiefly, on the products of their herds and flocks. They have no permanent homes, but wander from place to place, to find pasturage for their cattle, sheep, and goats. Barbarous people are noted for their skill and bravery in the care and defence of their herds.

Half-civilised people are more skilled in agriculture and manufacturing than barbarous tribes. They are more or less educated, but have little or no communication with other people.

Civilised, or enlightened, nations are characterised by their knowledge of the arts and sciences, their education, literature, and capability of self-government.

The occupations and general condition of people depend, principally, upon climate and productions.

Within the Torrid Zone, where food and shelter are obtained with but little exertion, there are no powerful nations.

In the North Temperate Zone, where extremes of climate demand the greatest skill and energy, are found the most perfect types of man, and all of the great nations of the earth.

The five races of mankind are distinguished from one another, chiefly, by the colour of the skin, and the shape of the features. They are, the Caucasian, Mongolian, Negro, Malay, and American Indian.

TOPICAL DIAGRAM OF THE RACES OF MANKIND.

Race.	Characteristics.	Abode.
Caucasian	Colour—usually white, sometimes dark; eyes—blue, grey, or dark; hair—chiefly brown; beard—heavy; features—regular; forehead—high.	India, Arabia, Europe (except Lapps, Finns, and the Magyars of Hungary), Northern Africa and America.
Mongolian	Colour — yellow to swarthy; eyes — black and almond-shaped; hair—black and straight; beard—scanty; cheek-bones—high.	China, Japan, Hungary, Lapland, Finland, and Arctic regions (Esquimaux).
Negro . .	Colour—black; eyes—black; hair—black and woolly; beard—scanty; lips—thick and protruding; nose—flat; forehead—low and retreating.	Central and Southern Africa, New Guinea, and Islands of Melanesia.
Malay . .	Colour—brown; eyes—black and horizontal in face; hair—straight and black; beard—full.	East Indies and Polynesia.
American Indian.	Colour—red to swarthy, often of copper hue; eyes—black; hair—black; cheek-bones—high.	American Continent.

POLITICAL ATLAS.

A Political Atlas treating of the division of the world into various countries or states; and of the occupations of the inhabitants, and of government.

OCCUPATIONS.

Occupations are the different kinds of work in which people are engaged. The principal occupations are agriculture, hunting, fishing, mining, manufacturing, commerce, and the professions.

Agriculture is the most important of all the occupations, since the world is fed from the fields. Stock-raising and dairying are branches of agriculture. In very warm countries agriculture is not conducted with much skill; for the fruits grow wild, in great abundance, and little care is required to procure food, shelter, and clothing. Thus, it is said that three of the bread-fruit trees will afford one person a constant supply of food. On the other hand, in very cold countries, where the ground is covered with snow the greater part of the year, the soil will not yield a sufficient support, and the people must gain a subsistence by hunting and fishing. A temperate climate is favourable to the highest skill in agriculture. In such a climate, few useful plants grow without cultivation; yet, by cultivation, a great abundance may be produced. For the production of wheat, corn, and other grains common to the temperate zones, much labour is required, but such labour is well rewarded.

The raising of live stock is an important industry in countries where good pasturage is abundant. The term live stock includes cattle, horses, sheep, goats, etc. The principal articles obtained from them are, hides, skins, horns, tallow, hair, wool, beef, mutton and pork, and the products of the dairy—milk, butter, and cheese.

Hunting supplies a large part of the food in thinly peopled countries; it also furnishes the fur used for winter clothing.

Fishing.—The products of the fisheries are of great value to man. Oil and whalebone are obtained from the whale; sealskin and oil from the seal; and vast numbers of cod, salmon, mackerel, herring, and other fish are salted, or otherwise preserved, for food.

Mining is the business of obtaining mineral productions. The places where they are obtained are called mines. The place from which building-stone is taken is termed a quarry. Mineral productions consist principally of jewels or precious stones; of precious metals, such as gold, silver, and platinum; of useful metals, as iron, tin, lead, copper, zinc, and quicksilver; of various kinds of stone, such as marble, granite, sandstone, limestone—useful for building purposes; of coal, salt, and many other minerals.

Manufacturing is the art of adapting natural productions to the uses of man. Very few productions are used in their natural state by men; they must undergo some change to suit their necessity or pleasure. Even the savage, whose wants are few and simple, pounds his corn into meal with a heavy stone, and fashions his rude war-hatchet and spear.

In civilised society many different articles are manufactured from animal, vegetable, and mineral productions. Such articles are called manufactures. Thus, leather is made from the skins of animals; cloth from cotton, hemp, and flax; agricultural and household implements from iron, copper, and tin. It will thus be seen that there are two classes of productions: those which are in a natural state, and those which are manufactured.

Among the most necessary manufactures are those which are used for food, clothing, and shelter. From grain, milk, and the sugar-cane, various kinds of food and drink are made—some of them wholesome, others very injurious. Thus, grain is made not only into flour and meal, but into ale, beer, whisky, and other intoxicating drinks. From the sugar-cane are manufactured not only sugar and molasses, but rum. Vast quantities of wine are made from the grape. Among the substances most used for clothing are wool, cotton, leather, flax, and hemp (from which linen is made), and silk. Silk is made from the web of the silkworm. The silkworm is fed with the leaves of the mulberry-tree, which grows luxuriantly in southern Europe, China, and India. For building purposes, wood, stone, clay (for bricks) and iron, are chiefly employed. The principal material used for making glass is sand.

The ingenious and costly machinery of our great manufacturing establishments requires wealth and a high state of civilisation. On that account we must not look for extensive manufactures in a thinly settled country, or among an indolent people. Machinery is usually driven by steam. In large cities steam is almost the only power employed. In country districts, especially in the vicinity of waterfalls or rapids, water-power is extensively used. The mill or factory is situated on the bank of the stream, and water falling upon a large wheel turns it around. The revolution of the wheel drives the machinery which manufactures the goods. Sometimes the machinery is driven by the power of the wind. The mill is then called a wind-mill.

Commerce is the exchange of goods. When a farmer raises more than he wants, he sells the remainder for something which he does not himself produce. This is the case, too, with the miner, the manufacturer, the fisherman, and every other producer. Suppose the farmers of an extensive district raise an abundance of grain and live stock—they wish to sell the surplus in order to procure other articles, such as sugar, tea, coffee, furniture, and books. They cannot dispose of their grain and live stock to each other, for each man raises more than he needs for his own use. They cannot spare the time to carry their produce to a distant region; they therefore take it to some neighbouring town. The merchants of that town buy the produce thus furnished by the surrounding country, and export it to other places. They also import a variety of articles, of which the people stand in need.

Commercial Towns.—In a prosperous country there are many large commercial towns in the interior and upon the coast, each forming the centre of trade for the surrounding district. A sea-coast town cannot have an extensive foreign commerce, unless the harbour is deep enough to admit large ships—for the commerce with distant countries is not often carried on in small vessels. The interior commercial towns are generally situated upon some large river, or lake, which communicates with the coast. Where these are wanting, a railway sometimes supplies the deficiency.

The *Professions* are occupations in which the work is done mainly with the mind, as in law, medicine, the ministry, teaching, etc.

GOVERNMENT.

Government is that system by which the laws of a country are made, approved, and executed. Among savage and barbarous nations there are few established forms of law. The lives and property of the people are generally at the disposal of the chief.

A government has three departments, the Legislative, the Judiciary, and the Executive. The legislative makes the laws; the judiciary expounds them, and the executive enforces them. There are two principal forms of government, a Monarchy, and a Popular Government. There are many other names of governments: as, the Patriarchal, which existed in the early history of the Jews, and is now found among the tribes of American Indians, and among some of the tribes of Arabs; and the aristocracy and democracy of the ancient Greeks and Romans.

A *Monarchy* is government by a monarch who is a ruler that inherits his power and holds it for life. Monarchs have different titles. Thus, the monarch of an empire is called an Emperor, Czar, Sultan, Shah, Mikado, etc.; of a kingdom, a King; of a principality, a Prince; of a duchy, a Duke; of an electorate, an Elector. The monarch, when a woman, is called a Queen, or Empress.

There are two forms of monarchy, Imperial and Constitutional. In an Imperial Monarchy the ruler may himself exercise all three of the powers of government, legislative, judicial, and executive. He has almost uncontrolled power over the lives and property of his subjects. China, Persia, Morocco, and most of the half-civilised countries of the eastern continent are imperial monarchies.

SAVAGE.

In a Constitutional Monarchy, the ruler is himself bound to obey the constitution. A constitution is a written instrument in which the rights of the people are stated. Great Britain is an example of a constitutional monarchy.

A *Popular Government* is one in which the people govern themselves. There are two kinds of popular government, Democracies and Republics.

In a Democracy the people govern themselves directly. In a Republic they are ruled by representatives elected by popular vote for a term of years. Most of the states and countries of the western continent are republics. The United States forms the best example of a Republican government.

The character of a government depends, in a great degree, on the intelligence of the people. Despotism can exist only among the ignorant and barbarous. Civilised communities understand their rights, and require their rulers to observe and respect them.

BARBAROUS.

STATES OF SOCIETY.

States of Society are the conditions of people as regards political divisions, occupations, government, religion, education, etc. The various nations and tribes of men are classed as savage, barbarous, half-civilised, and civilised.

Savages are the lowest and most degraded class. They have no political divisions or towns, few and rude occupations, cruel or weak government, degrading religion, and no education. Very few savages cultivate the soil. The greater part subsist on roots and wild fruit, or by hunting and fishing. Some tribes are ignorant of the use of fire, and eat their food raw. The American Indians, many of the negro tribes of Africa and all the native tribes of Australia are savages.

In the *barbarous* state men are somewhat more advanced than in the savage. They have indefinite political divisions, patriarchal or tribal government, nomadic occupations, Pagan or Mohammedan religion, and meagre education. They pay little attention to agriculture, but generally derive their support from their flocks and herds, and from hunting and fishing. The wandering tribes who inhabit the great plateaus of Central Asia, the Bedouins of Arabia, and the Tuareks and some of the Moorish tribes of Northern Africa belong to this class.

HALF-CIVILISED.

Savage and barbarous nations have very imperfect ideas of good and evil, and very little aptitude for labour. They are almost always engaged in war. They are addicted to plunder and robbery, are cruel and revengeful, and generally treat their women as inferior beings.

CIVILISED.

Half-civilised nations have definite political divisions and large towns. They practise the manual occupations with great skill, but have only a limited knowledge of the professions. They have Mohammedan, Buddhist, or Brahmin religions and narrow education. They are jealous of strangers, and have very little communication with foreign countries. For this reason they make but little progress, and continue for centuries in the same condition. Most of the half-civilised nations inhabit the

Eastern Continent. The Persians, Turks, Hindoos, and Chinese are half-civilised.

Civilised nations have many political divisions for the purpose of local self-government, and many cities and villages. They practise all the manual and professional occupations, have constitutional governments, Christian or Jewish religion, and many public schools, and schools of higher education.

The civilised man can measure the size and distance of the heavenly bodies, which the savage ignorantly worships as gods. Civilised nations rapidly advance in knowledge, for they maintain a constant communication with each other, and with the remotest parts of the earth. They have colleges, churches, hospitals, and many other useful institutions.

Some nations belong to more than one of these classes. Most of the civilised nations belong to the Caucasian race. Nearly all the inhabitants of Europe, and their descendants in America and other parts of the world, belong to this class.

Civilisation has made comparatively little progress among the four coloured races. The Chinese and Japanese are the only nations of the Mongolian race that possess any civilisation. The Ethiopian race has never produced a civilised nation. The inhabitants of Java are the only representatives of the Malay race who have reached a position above the barbarous state, and the Spanish conquerors in Mexico and Peru destroyed the only efforts at civilisation by the American Indians.

DESCRIPTIONS OF COUNTRIES.

The entire surface of the globe is represented by the two hemispheres:—the Eastern, and the Western. The meridian of 20 degrees west of Greenwich is usually chosen for the dividing line between the Eastern and Western Hemispheres, though any other meridian would answer equally well. This line was adopted because it was supposed to be the meridian of Ferro, one of the Canary Islands. Ferro was the most western land known to the ancients; the region beyond being to them one of doubt and darkness. This island is now known to be a little east of 20°.

The Western Hemisphere comprises the Western Continent, a small part of the Eastern Continent, a portion of the Antarctic land, and numerous islands; besides a part of the Pacific, Atlantic, Arctic, and Antarctic Oceans. There is much more water than land in this hemisphere.

The Eastern Hemisphere comprises the Eastern Continent (except the north-eastern extremity), a portion of the Antarctic land and numerous islands; besides the Indian Ocean, and a part of the Pacific, Atlantic, Arctic, and Antarctic Oceans. There is also more water than land in this hemisphere.

Except the Antarctic land, and a few small islands far out at sea, every tract of land now known is included within one of the six grand divisions of Asia, Europe, Africa, North America, South America, and Oceania.

The globe may also be divided into a Northern and a Southern Hemisphere; of which the former contains the greater proportion of land—the latter, of water.

In the Southern Hemisphere there are various tracts of land lying within the Antarctic Ocean, which may be included in the general name of Antarctic land. Until the year 1819, no land was known to exist south of the 60th degree of South Latitude. Since that time, navigators have discovered numerous islands and bodies of land, among which are the South Shetland Islands, Graham's Land, Victoria Land, and Enderby's Land. The most extensive tract yet known in that part of the world is called the Antarctic Continent, situated about 2,000 miles south of Australia. It was discovered in 1840, by Captain Wilkes, of the American Navy. He sailed along the coast a distance of 1,700 miles, east and west. In 1841, Captain Ross, of the British Navy, explored a line of coast (Victoria Land), extending southward to within 830 miles of the South Pole; being the nearest approach yet made to that point. He discovered, in these frozen regions, an active volcano, 12,400 feet high, which he named Mount Erebus. A little farther east, he saw an extinct volcano, which he named Mount Terror. All these regions are barren and desolate. The land is perpetually covered with ice and snow, and the coasts are for the most part bordered by vast masses of ice. There are no inhabitants, and but few land animals; and some tracts are wholly destitute of vegetation. It has been ascertained that the ice of the Antarctic region extends 10 degrees nearer the Equator than that of the Arctic.

Hunting the Polar Bear.

THE CONTINENTS.

The most extensive bodies of land upon the surface of the earth are the Eastern and Western Continents.

The Eastern Continent, and the islands immediately adjacent, form three grand divisions: Europe, Asia, and Africa. This continent is more than twice as large as the Western. The grand division of Oceania (which is nearly all in the Eastern Hemisphere) includes Australia and nearly all the islands of the Pacific Ocean.

The Western Continent (sometimes called the New World), with the neighbouring islands forms two grand divisions; North America and South America, which are connected by the Isthmus of Panama. The Eastern and Western Continents approach nearest each other at Behring Strait, which, at the narrowest part, is only thirty-six miles wide. A partial connection is established by the Aleutian Islands, which extend from the Peninsula of Alaska, in North America, to Kamtchatka, in Asia.

Position.—The greatest extent of land in the two continents is north of the Equator, and in the North Temperate Zone. Only a small part is in the South Temperate, and none extends to the South Frigid Zone.

Climate.—The position of the continents determines, in a great measure, the climate of the five sections of which they are composed. The three northern sections (Asia, Europe, and North America) are principally in the Temperate Zone, and extend beyond the Arctic Circle—forming almost a connected line around the North Pole. They are, therefore, colder than the two southern sections (Africa and South America), which lie chiefly within the Tropics, and are far removed from the Frigid Zone.

Outline.—The outline of the two continents present some points of resemblance, and some of contrast. The southern section of each continent is a peninsula, connected with the main body by a narrow isthmus. Each of these peninsulas terminates in a pointed projection towards the south. An island, or group of islands, is found east of the southern part of each continent: as Madagascar, east of Africa; and the Falkland Islands, east of South America. The three northern sections are deeply indented by large seas and gulfs; while in the two southern, the coast is unbroken by any large arms of the ocean. It is partly owing to this circumstance that South America and Africa have not been more thoroughly explored by Europeans. The greatest length of the Western Continent is from north-west to south-east; while that of the Eastern is from north-east to south-west.

Surface.—The Western Continent is traversed throughout its entire length by a great mountain system, which accompanies the line of its western shores. East of this great chain is a vast plain, stretching throughout the entire length of the continent, interrupted only by the Gulf of Mexico. The eastern limits of this plain are formed by inferior mountain systems. The Eastern Continent also contains an immense mountain system traversing the greatest length of the main body (Asia and Europe), from the Pacific to the Atlantic Ocean. Southward from this system extend a number of peninsulas; Farther India, Hindustan, and Arabia, in Asia; and Greece, Italy, and the Spanish Peninsula, in Europe. These peninsulas are penetrated by mountain chains—branches of the principal system. Northward from this great mountain band, a vast plain extends to the shores of the Arctic Ocean. It stretches east and west, from Behring Strait to the Atlantic Ocean—about one-third the circumference of the globe.

NORTH AMERICA. *See Map, page* 544.

Position.—North America lies in the Western Hemisphere, in the North Frigid, North Temperate, and Torrid Zones. It extends from 8° to 72° N. latitude and from 55° to 168° W. longitude, and is bounded by the Arctic, Atlantic, and Pacific Oceans.

Size.—In extent it is third among the grand divisions, Asia and Africa being larger. Its area is about 9,000,000 square miles. It is more than twice as large as Europe, and more than half as large as Asia. Its greatest breadth from east to west is 3,200 miles, and its greatest length from north-west to south-east is 4,800 miles. It has a coast-line of about 30,000 miles.

Outline.—The outline is irregular; the coast-line, particularly on the east and the north, is broken by large gulfs and bays. The general form of North America is that of a triangle. Groups and chains of islands lie near the shores, and numerous capes and peninsulas project into the surrounding oceans.

Surface.—The surface consists mainly of three forms of relief—the Pacific Highland, in the west; the Atlantic Highland, in the east; and the Great Central Plain. There are three great mountain systems—the Rocky Mountain System, the Sierra Nevada, and the Appalachian System. Some geographers regard the western ranges from the Arctic region to Cape Horn as one continuous mountain system, the various chains of which are called Cordilleras. The name "Cordilleras of North America" is given to all mountain chains west of the Great Central Plain, and "Cordilleras of the Andes" to chains along the Pacific coast of South America. The Atlantic Slope, the Pacific Slope, and the Arctic Highland are additional and minor relief forms. (Mountains, plateaus, and plains are called forms of relief.) The Pacific Highland extends over the entire length of North America, and about one-third of its breadth. It includes the Plains of the Columbia, the Great Interior Basin, and the Mexican Plateau. Its elevation varies from 800 feet (near the Arctic shores) to 8,000 feet (in Mexico). The volcanoes of Mt. St. Elias and Popocatepetl are the highest peaks in North America. The Rocky Mountains, an immense chain 5,700 miles long, are on the eastern border of this Highland; and the Sierra Nevada, the Cascade, and the Coast Mountains are on its western border. Between the Pacific Highland and the Pacific Ocean is the narrow belt of lowland known as the Pacific Slope. The Atlantic Highland extends from Labrador nearly to the Gulf of Mexico. It includes the Labrador Plateau and the ranges of the Appalachian System. It has an elevation of about 3,000 feet. The Atlantic Slope lies between this Highland and the Atlantic Ocean. In the south it widens, and where there are no mountains to continue the division, it unites with the Gulf Plain, which is the most southern part of the Great Central Plain. The Great Central Plain lies between the Atlantic Highland and the Pacific Highland, and extends from the Arctic Ocean to the Gulf of Mexico. It is crossed about midway by a very gradual swell of ground called The Height of Land, which forms the divide between the rivers of the Arctic and the Hudson Bay Systems, and those of the St. Lawrence and Gulf of Mexico Systems. The Gulf Plain and the Arctic Plain are the lowest parts of the Great Central Plain. The Arctic Highland is in the northern part of North America, occupying parts of the mainland and of islands in the Arctic regions.

Drainage.—The Rocky Mountains are the chief divide of North America. They are also the great condensers of moisture, and their supply of rain and snow forms the vast reservoir from which the largest rivers are fed. There are three great systems of lakes and rivers—the Atlantic System, the Pacific System, and the Arctic System.

ANIMALS OF NORTH AMERICA.

Besides these there are the waters of the Great Interior Basin, which have no outlet to the sea. The subdivisions of the Atlantic System are the Hudson Bay, the St. Lawrence, and the Gulf of Mexico Systems. The last-named includes the Mississippi System. The Mississippi, with its numerous tributaries, is the most important river of North America. The northern part of the Great Central Plain abounds in lakes of the St. Lawrence System, the Hudson Bay System, and the Arctic System. The five great lakes of the St. Lawrence contain about one-fourth of all the fresh water on the globe. Great Salt Lake is the largest salt lake in North America.

Climate.—As North America lies in the Torrid, Temperate, and Frigid Zones, it has every variety of climate. The climate of the Pacific Slope is milder and has a more uniform temperature than that of the Atlantic Slope in the same latitude, owing to the influence of the warm Japan current (Kuro Siwo, or Black Water) and of warm winds from the Pacific. In many sections the temperate regions of North America present peculiar variations of temperature; the winters are very cold, the summers very hot, and the changes sudden, so that the climate is unusually severe for the Temperate Zone. The Pacific Highland has, in general, a very dry climate, with little rain at any season. The rainfall on the Pacific Slope, on the Atlantic Highland, and on the Atlantic Slope is abundant. There are certain nearly rainless tracts on the tablelands of Mexico and Central America and in the Great Basin.

Productions and Animals.—The most important vegetable products are those of the various lowland plains, including grain, coffee, cotton, fruits, lumber, rice, sugar, and tobacco. The richest mines of ore are, as a rule, in the mountainous regions; those of coal and other useful minerals are partly in the plains and plateaus. The larger wild animals of North America are now found chiefly in the north and in the west. Live-stock, furs, and grazing products are the principal animal productions. All the domestic animals, except the turkey, were originally of European stock, brought to America by the white settlers.

Inhabitants.—The population of North America is over 85,000,000. It is composed of Indians, descendants of European settlers, European emigrants, freedmen and others of African descent, Eskimos, Chinese, and persons of mixed races. The Indians number about 5,000,000, the negroes about 7,000,000, the Chinese about 105,000, and the whites over 70,000,000. The Indians belong to the American, or Red, race; the whites to the Caucasian, or White, race; the negroes to the African, or Black, race; and the Chinese and the Eskimos to the Mongolian, or Yellow, race.

POLITICAL DIVISIONS.

North America consists of the following divisions: the United States (including Alaska), British America, Danish America, Mexico, Central America, and the West Indies.

British and Danish America, and Alaska.

These three divisions constitute one-half of North America. The regions bordering upon the Arctic Ocean are among the most dreary and desolate on the face of the earth. The shores are covered with eternal snows, and the entire surface of the sea with large fields and huge masses of floating ice.

An Iceberg.

Notwithstanding the fearful dangers encountered in these frozen regions, the Arctic Ocean has been perseveringly explored for 300 years, partly because of the hope of finding a passage from the Atlantic to the Pacific, and partly for scientific discovery.

The voyage to India and China, from any Atlantic port, is now made by way of Cape Horn, the Cape of Good Hope, or the Suez Canal. The distance by way of the Arctic Ocean is only about half as great; hence these repeated attempts to find a "North-west Passage." That such a passage exists was proved by Capt. McClure, of the British Navy, who in 1852 forced his way through it; but so perilous and difficult is its navigation that it can never be of any commercial value.

Discoveries in the Arctic Ocean.—Most of the discoveries have been made by British and American navigators. Grinnell Land was discovered in 1850 by the expedition under command of Lieut. de Haven, sent out in search of Sir John Franklin. In 1852, Dr. Kane, of the U.S. Navy, penetrated as far as 82° 30′ North Latitude, where he claims to have discovered an open Polar Sea, free from ice. In 1861, Dr. Hayes reached a point still farther north. Since then several expeditions, mostly by way of Behring Sea, have been undertaken, but, so far, with no important or practical results either in a scientific or commercial point of view.

Climate.—It was formerly supposed that the climate of nearly all this territory was so severe that the country must for ever remain a desolate waste. The Valley of the St. Lawrence, and part of the Basin of the Saskatchewan, were regarded as the only cultivable regions. It is found, however, that the country south-west of Hudson Bay is well adapted for agriculture, and is capable of sustaining a considerable population. The climate at and near Sitka is also mild.

Vegetation.—There is scarcely any vegetation in the north capable of supporting man. In the cultivable districts of the south, wheat and other grains common to the Temperate Zones are raised. Quantities of mosses, lichens, berries, willows, and shrubs grow in the cold districts of the north, upon which the numerous birds and land animals subsist. In Greenland, a very small red plant grows upon the surface of the snow. When first seen it was thought to be red snow, and is now generally called by that name.

Animals.—These frozen regions of the north, though thinly peopled, abound with animal life, both on land and in the sea. Their chief value, indeed, to the European governments, by which some of them are held, is in the trade in oil, whalebone, and skins, which are thus supplied. Within the Tropics, land animals attain the greatest size; but the largest sea animals are found in or near the Polar waters. The Great Rorqual (a species of whale found in the Northern Atlantic) is the largest of living animals, being sometimes from 80 to 100 feet long. The lakes and seas abound with fish, and myriads of water-fowl hover upon the coast. The principal amphibious animals are the seal and walrus. The walrus is sometimes eighteen feet long, with tusks three feet in length. The grizzly bear, the largest and most dangerous of the bear tribe, is found among the Rocky Mountains, in the southern districts. The white, or Polar bear, inhabits the northern coasts. The buffalo, moose, elk, deer, and reindeer are numerous; and immense numbers of the smaller fur-bearing animals—as the fox, wolf, raccoon, otter, marten, and beaver, are yearly taken by the trappers.

Inhabitants.—Except in Iceland and the British Provinces, the inhabitants are chiefly Indians and Eskimos. The few Europeans are mostly government officers, or persons employed in the fur trade. The Eskimos inhabit the northern districts near the coast. They belong to the Mongolian race, and are of low stature and filthy appearance. They derive their support principally from the sea. They eat the flesh of the bear and reindeer, and clothe themselves with the skins. The oil of the whale, seal, and walrus affords them light during the long night of winter; and they consume the blubber (or fat) for food. The Eskimo frames his canoe with the bones of the whale, and covers it with the skin of the seal. Instead of the reindeer, he harnesses a team of dogs to his sledge, by which he is rapidly drawn over the fields of ice and snow. The hardy native does not hesitate to attack the walrus and the formidable Polar bear, which are encountered on the fields of ice.

BRITISH AMERICA.

British America comprises all of North America north of the United States, except Alaska, Greenland, and Iceland. It consists of eight States or provinces, five districts, and two extensive territories. One of these States, Newfoundland, is a separate province. The rest of British America is united under the name Dominion of Canada. The districts and territories comprise about three-fourths of the Dominion in extent. They were formerly all included under the name North-west Territory, but this extensive tract has since been divided into five districts and two territories, each with a separate name.

ALASKA. *See Map, page* 542.

This country was purchased by the government of the United States from Russia in 1867. It has an area of about 577,000 square miles, or more than ten times that of the State of Illinois, and has been but partially explored. North of the Peninsula of Alaska the coast is low and marshy, but south of this peninsula it is bold and mountainous, often consisting of precipitous cliffs, which descend abruptly to the sea. Groups of volcanic islands skirt this part of the coast, and between them and the mainland is a remarkable interior channel, safe for steamboat navigation at all times. The Yukon River is navigable for 1,500 miles, and is nearly as large as the Mississippi. Extensive forests of pine, cypress, spruce, poplar, and willow cover much of the country. Deposits of valuable minerals exist in the mountain ranges. An astonishing quantity of animal life is supported in the forests, the streams, and the island passages of the sea. The otter, beaver, seal, ermine, sable; foxes, bears, wolves, and other fur-bearing animals, are found in great numbers. Myriads of birds fill the woods in summer, while the waters swarm with cod, halibut, salmon, and many other varieties of fish. About 500 whites and 70,000 Indians and Eskimos constitute the population. The latter are filthy and degraded, and live in huts wholly or partly underground. Sitka, on Baranoff Island, is the seat of government.

DANISH AMERICA.

Danish America includes Greenland and Iceland.

Greenland.—It is not yet known whether Greenland is an island, or a cluster of islands joined together by ice. The coast is high and rocky, and the more elevated portions are covered with perpetual snow and ice. But recent explorers have found in summer, even at the far north, grassy meadows inhabited by reindeer and the musk-ox, by bees and butterflies. The Danish Governor resides at Lichtenfels on the west coast. The Moravian missionaries have also settlements on this coast and on the opposite coast of Labrador, and many of the natives have been converted to Christianity.

Iceland.—This island is of volcanic formation. Ranges of high and rugged mountains border the coast, while the interior is a dreary desert of volcanoes, ice-clad mountains, or fields of lava. The most famous of the volcanoes is Mount Hecla. There are also boiling springs (called geysers) which throw up water, steam, and even large stones to a great height. The settlements are all near the coast. Reikiavik is the principal town. The Icelanders are of European origin, and are generally well educated. Notwithstanding its name, Iceland is not so cold a country as Greenland. It was called Iceland by a Norwegian pirate, who, on his first visit, saw a bay filled with ice which had floated there from Greenland. Greenland was so named by an Icelandic chief, who, for some crime, was obliged to flee from his native land. To induce his countrymen to follow him to Greenland, he falsely represented it as superior in fertility to Iceland.

THE UNITED STATES. *See Map, page* 542.

Position.—The United States (excluding Alaska) occupies the middle part of North America, and thus has a favourable position, being equally removed from the blighting cold of the Frigid Zone and the enfeebling heat of the Torrid Zone. It extends from 24° 30′ to 49° N. latitude, and from 67° to 124° W. longitude.

Size.—It is nearly as large as Europe, and about three-eighths as large as the whole of North America. In point of size it ranks fourth among the great powers of the world, only the Russian, the British, and the Chinese Empires being larger. Its extent east and west is about 2,700 miles, and north and south about 1,600 miles. It has an area of 3,000,000 square miles and a coast-line of about 14,000 miles.

Outline.—The Atlantic coast is very irregular, with numerous indentations; the Gulf coast is more regular; while the Pacific coast is comparatively unbroken. The fine harbours and the great lakes and rivers compensate for the want of extensive inland seas. There are numerous islands along the coasts, and their structure and position indicate that they were once parts of the mainland, and that they have been detached from it either by changes of level or by the action of the surrounding waters.

Surface.—The principal forms of relief are the three main forms of North America—the Pacific Highland, the Atlantic Highland, and the Great Central Plain. The three great mountain systems of North America cross the United States north and south. The minor relief forms are the Atlantic Slope, the Pacific Slope, and the Gulf Plain. The United States includes the widest and highest portion of the Pacific Highland, the greater part of the Atlantic Highland, the southern slope of the Great Central Plain, and the whole of the Atlantic Slope.

In the United States, the Pacific Highland includes the Sierra Nevada and the Rocky Mountains, and the great plateau surmounted by them. It varies from 400 to 1,000 miles in breadth, and has an average elevation of 5,000 feet. It includes numerous mountain chains, mostly running north and south, and the intervening tablelands and valleys. Many of its sections are famous for the great variety and beauty of their scenery. It is naturally divided into three regions—the Plains of the Columbia (average elevation, 2,000 feet), the Colorado Plateau (8,000 feet), and the Great Interior Basin (4,500 feet). The Great Interior Basin lies between the Wahsatch Mountains and the Sierra Nevada, and extends also to the southern extremity of California, where it is, in some places, below sea-level. It has many fertile valleys, but its general character is that of a desert. The Plains of the Columbia are north of the Great Basin.

They are characterised by volcanic tablelands, but some regions contain beautiful, verdant valleys. East of the Rocky Mountains, the Pacific Highland slopes so gradually and seems so nearly level, that this eastern section is known as The Great Plains.

The Pacific Slope, in the United States, includes especially the low valleys and parks of California, Oregon, and Washington, and, in popular description, the whole area which is drained into the Pacific Ocean. Much of the country west of the Sierra Nevada and Cascade Mountains is exceedingly fertile, and is capable of sustaining a dense population.

The Atlantic Highland, south of the St. Lawrence, consists of the Appalachian System and adjacent plateaus. It has an average elevation of about 2,000 feet, and its breadth varies from 150 to 200 miles. It descends very gradually to the plain on the west, more abruptly to the Atlantic on the east, on which side it is bordered by a continuous line of rock called the Granite Ledge.

The Atlantic Slope proper has a lowland and an upland region. For about 100 or 150 miles from the base of the mountains, the land has a general elevation of about 1,000 feet, with a hilly and broken surface. The coast district, or "tide-water region," is low and flat, rarely rising more than 200 feet above the ocean. South of the Hudson River, this district has an average width of from 30 to 150 miles. North-east of the Hudson River (in New England), the hilly country extends nearly to the ocean; so that the flat district is an unimportant feature.

The Rocky Mountain System stretches nearly across the country, at an average distance of 800 miles from the Pacific Ocean. The loftiest peaks (in the United States) are Mount Harvard (14,452 feet), Uncompahgre Peak (14,408 feet), Gray's Peak (14,341 feet), Long's Peak (14,271 feet), and Pike's Peak (14,147 feet). The surrounding plateau is so high that they rise only about 8,000 feet above it. There are thirty-seven peaks in Colorado alone more than 14,000 feet above the sea-level.

The Sierra Nevada System also extends across the country, near the Pacific coast. The Sierra Nevada and the Cascade Mountains are essentially one chain. The highest peak, Mount Whitney (14,898 feet), and the most massive portions of this chain lie south of Lake Tahoe (latitude 39° N.); all the higher peaks (in the United States) which lie north of this point are sharp volcanic cones, the highest of which are Mount Shasta (14,442 feet) and Mount Rainier (14,444 feet). Lava covers more than 150,000 square miles. These volcanoes are now all apparently extinct. There are numerous volcanoes in Alaska, the highest of which is Mount St. Elias (19,500 feet). Those on the continent are believed to be extinct. The Aleutian Islands are but the summits of a great chain of volcanoes which rise from the ocean's bed. Several of these are now active. Between the Sierra Nevada System and the ocean are numerous lower chains, known as the Coast Ranges; the higher peaks are from 4,000 to 8,000 feet. Their western slopes are mostly clothed with very dense forests, and among them are some of the most beautiful and fertile valleys in the country. The western slope of the Sierra Nevada and Cascade Range is clothed with evergreen forests, which, in regard to their density and the height and size of their trees, are the grandest forests on the globe. The eastern slope is very much drier and with scantier vegetation. Between the Sierra Nevada and Rocky Mountains are numerous mountain chains, more or less detached from each other, and rising from the plateaus. Some have scanty forests; others are nearly treeless.

The Appalachian System is almost wholly confined to the United States. It extends from the north-eastern border nearly to the Gulf of Mexico. It consists of several parallel ranges, of which the Alleghany Mountains are the highest. The average width of the system is 60 miles, and the average elevation from 2,000 to 3,000 feet. The highest peaks are Mitchell's Peak (6,711 feet), in North Carolina, and Mount Washington (6,286 feet), in New Hampshire. These mountains are in general clothed to their summits with forests, containing a greater variety of trees than any other forests of temperate climates.

The Central Plain is a part of the Great Central Plain of North America, and embraces the lowlands of the Mississippi Basin, or Valley, a part of the Basins of the St. Lawrence and the Red River of the North, and the Gulf Plain. The Mississippi Basin extends from the summits of the Rocky Mountains to those of the Alleghanies, and occupies nearly one-half the area of the United States. It includes a large part of the Atlantic and the Pacific Highlands and of the Great Central Plain. It slopes eastward from the Rocky Mountains, westward from the Alleghanies, and southward from The Height of Land. The soil of the Mississippi Basin is, in general, very rich. The most important exception to the fertility of this region is a dry plateau along the base of the Rocky Mountains, stretching eastward 400 miles, with an elevation of 4,000 feet. Illinois, the southern part of Wisconsin, and the country west of the Mississippi River as far as the Great Plains, consist mostly of prairie land. The Prairies are the great grassy plains of the Central States. They are treeless except near the rivers, where they are well wooded. They have a rich soil, with a thick growth of grass. In some parts the surface is level; in others, rolling. The St. Lawrence Basin is a well-wooded, fertile region, from 300 to 500 feet in elevation. The Valley of the Red River of the North is included in the Saskatchewan Basin, and its waters flow into Hudson Bay. The Gulf Plain is the extreme southern part of the Central Plain.

Drainage.—The lakes and the rivers belong to two great systems—the Pacific System and the Atlantic System. The waters of the Great Interior Basin have no outlet to the sea. The most important rivers of the Pacific System are the Yukon, the Columbia, and the Colorado. As the Rocky Mountains—which are the main watershed, or divide, of the United States—are nearer to the Pacific Ocean than to the Atlantic, the longest rivers of the country flow into the Atlantic. The Mississippi and its tributaries form the most extensive uninterrupted river navigation in the world: small steamboats can pass from the Great Falls of the Missouri to the Gulf of Mexico, a distance of 3,000 miles. The St. Lawrence is the only outlet of the five great lakes. The Basin of the Mississippi is more than twice as large as the Basin of the St. Lawrence, yet the latter river discharges into the sea twice as much water as the former. The rivers of the Atlantic Slope are swift in the north, and slow in the south on account of the increasing width of the Slope toward the south. They are usually navigable to the edge of the upland country. This point, therefore, determines the position of many important towns.

Climate.—The climate is such as belongs to the middle and the southern parts of the North Temperate Zone. The south has hot summers and mild winters. Farther north, the contrast between the seasons is greater; the winters are very cold, and the summers very warm, although not so warm as those of the south. The Atlantic Highland and Slope have winters much colder than those of the Pacific Slope in the same latitude. The Pacific Highland has a very dry climate, the south-west winds from the Pacific having lost their moisture before reaching the great plateaus of the west. On the Pacific Slope, owing to the influence of the Japan Current and warm westerly winds, the climate is mild and equable. This region has a rainy season, including winter and spring, and a dry season lasting the rest of the year. The Great Plains are so far inland that they receive little moisture from ocean winds, and have, therefore, a deficient rainfall. The Atlantic Highland and Slope and the Central Plain are well supplied from the Atlantic Ocean, the Great Lakes, and the Gulf of Mexico, and their rains are frequent and copious, and are distributed throughout the year.

Productions and Animals.—The vegetable productions include many semi-tropical plants, in addition to all the varied vegetation of the Temperate Zones. The Mississippi Valley is the great agricultural region of the United States; but wheat, Indian corn, rye, oats, and barley are raised in all parts of the country. The white potato succeeds best in the north. Its place is supplied in the south by the sweet potato. Rice grows in great abundance in the south, in the marshy tracts along the coast. In the extreme south, sugar is an important production; and oranges, lemons, and other tropical fruits are raised in abundance. Tobacco is raised in most of the States east of the Rocky Mountains, but principally in Kentucky and Virginia. Much, if not most, of the cotton used by mankind is raised in the Southern States. Hemp and flax thrive in various sections. The mineral resources of the United States are extraordinary. The deposits of gold, silver, quicksilver, copper, lead, and petroleum are of enormous value, and coal and iron are so extensively found that the supply seems inexhaustible. Large wild animals—wild-cats, wolves, bears, bisons, and deer—are still found in some thinly-settled regions, but they are fast disappearing. Great numbers of domestic animals are reared, and grazing is one of the most important industries.

Inhabitants.—In population the United States ranks fifth among the nations of the world, being surpassed only by the Chinese, British, and Russian Empires, and by France and her Colonies. The population has increased more rapidly than that of any other country in the world. The principal cause of this increase is the arrival of European emigrants, who seek American advantages. Besides the white population, there are numbers of negroes, Indians, and Chinese.

Political Divisions.—The United States consists of forty-two States, seven Territories, and the District of Columbia. For convenience of description these States and Territories are divided into six sections: New England, the Middle Atlantic States, the Southern States, the East Central States, the West Central States, and the Pacific States and Territories.

Government.—The United States is a Federal Republic. Each of the forty-two States has its own local government, but all are united under the Federal Government, whose seat is in the city of Washington.

Religion.—The government supports no particular form of religion. The greater part of the inhabitants are Protestants.

Education is general. Colleges and academies are numerous, and nearly every State has its system of free schools. The United States maintains a Military Academy (at West Point), a Naval School (at Annapolis), and a Bureau of Education.

History.—The first settlements on the Western Continent were made principally by the Spanish, the French, and the English. The Spaniards occupied the sections bordering on the Gulf of Mexico and a large part of South America. Their settlements (except in United States territory) are still occupied by their descendants, who speak the Spanish language. The Portuguese settled Brazil, and their language is still the language of that country. The French originally claimed and partly settled the Basin of the St. Lawrence and the Valley of the Mississippi; but the only part of this vast territory now in their possession consists of two small islands in the Gulf of St. Lawrence. The English made settlements in the Atlantic Slope, between Maine and Florida. Conquest extended their possessions, and at one time they owned British America and all the country east of the Mississippi River. In 1607 the first permanent English settlement in America was made, at Jamestown, in Virginia. Other colonies were settled from time to time, and in 1733 there were thirteen English colonies within the present limits of the United States. They remained attached to England until the War of the Revolution. The first battle was fought at Lexington, in 1775. The surrender of Lord Cornwallis, in 1781, put an end to hostilities. On the 4th of July, 1776, the colonies declared themselves a separate nation. In 1783 the British Government acknowledged their independence. In 1788 a written constitution was adopted, and in 1789 the first President was chosen and inaugurated. At the close of the Revolutionary War, the area of the United States was about 800,000 square miles, and the population 3,000,000. The area of the country (including Alaska) is now about 3,600,000 square miles, and the population 65,000,000. The progress of the country has been remarkable; and the great mass of the people are as happy and prosperous as those of any other country.

BRITISH NORTH AMERICA. *See Map, page* 543.

The British Provinces occupy all the northern part of North America except Greenland, Iceland, and Alaska. They formerly consisted of eight independent provinces, and the extensive region called the North-west Territory. All of these, except Newfoundland, are now united under the general name of Dominion of Canada.

Surface.—Most of the country east of the Rocky Mountains is a part of the Great Central Plain, and is generally level. The Appalachian Mountain System extends into Canada, and terminates in low hills on the Gulf of St. Lawrence. A gradual swell of ground, called The Height of Land, separates the Basin of the St. Lawrence from that of Hudson Bay.

Rivers and Lakes.—The River St. Lawrence drains the waters of the five great lakes—Superior, Michigan, Huron, Erie, and Ontario. They are supposed to contain more than one-fourth the fresh water upon the globe. The other rivers and lakes are large and numerous. The Saskatchewan River and its branches are navigable for near 2,000 miles. The basin of the St. Lawrence is famous for the grandeur and beauty of its natural scenery. Niagara Falls, the Thousand Isles and Rapids of the St. Lawrence, the Falls of Montmorenci (near Quebec), and the grand scenery of the Saguenay River, are the admiration of thousands of tourists. The St. Lawrence and the Lakes form the great natural highway of the country. By means of canals, they have been made navigable throughout their entire length. In winter, however, the water communication is frozen up. The river admits ships from the Gulf of Montreal. Between that point and Lake Ontario there are rapids. These are avoided, in ascending the river, by canals on the left bank; but the downward passage, though perilous, is made by the river itself. Lake Ontario is also connected with the Ottawa River by the Rideau Canal. The Bay of Fundy is remarkable for its high tides and the rapidity with which the tidal wave travels. The Falls of Niagara are avoided by the Welland Canal, which connects Lakes Erie and Ontario. The Falls in the River St. Mary are the only other natural obstruction, and are passed in a ship canal. The lakes and rivers of the central region form such a network, that, during part of the year, portage, or canoe communication, may be effected between the different rivers, or even between the Great Lakes and Hudson Bay.

Climate.—The northern portions are intensely cold; the southern are like the adjoining parts of the United States in climate and vegetation, but the climate is subject to great extremes. The summers in the south are very hot, while the winters are long and exceedingly cold. The interior has a dry and clear atmosphere, but the coast is often visited by thick fogs. In those districts which border upon the sea or the great lakes, the winters are much milder, and the heat of summer is less intense.

Government.—The legislature of the Dominion consists of a Senate appointed by the Governor-General, and a House of Commons elected by the people. The sovereign appoints the Governor-General, who is also Governor of all British America. Each province has also its separate legislature elected by the people, and a Lieutenant-Governor appointed by the Governor-General.

THE DOMINION OF CANADA. *See Map, page* 543.

Canada originally comprised an extensive range of country reaching, under the French, as far as even the Mississippi, away beyond the boundary lakes. It was subsequently limited to a region chiefly in the Basin of the St. Lawrence—including in that term both the lakes and the river. Canada, in the sense in which that word is most generally known, was, in 1791, divided into the two provinces Ontario and Quebec, or Upper and Lower Canada. These two sections were reunited in 1840; but became separate members of the Confederation—the Dominion of Canada—in 1867. The country composed of these two provinces extends eastward from near the Red River Settlement to the Gulf of St. Lawrence, and from Michigan to New Brunswick. Northward, it reaches from the Canadian lakes and the St. Lawrence to the high ridge of land which separates the rivers of Canada from those of the region long known as the Hudson Bay Territory, but, since 1870, forming part of the Dominion of Canada. Following is the area :—

Provinces.	Area in Acres.
Ontario	65,111,463
Quebec	120,764,651
Nova Scotia	13,382,003
New Brunswick	17,393,410
British Columbia	218,435,200
Prince Edward Island	1,365,400
Manitoba	78,848,140
North-west Territories	1,705,861,280
Total	2,221,061,447

The principal river of Canada is the St. Lawrence, and its most important tributaries are all from the left. The St. Lawrence drains an area of 568,000 miles. The Ottawa, 450 miles long, forms the boundary between Ontario and Quebec. The St. Maurice, nearly 400 miles in length, and the Saguenay, noted for its fine scenery, tributaries of the St. Lawrence, are both rivers of great volume. In 1535 Jacques Cartier, a brave French navigator, born at St. Malo in 1494, entering the St. Lawrence on the festival of the saint of that title, took nominal possession of North America in the name of his king, Francis I. In 1759 a small British army—5,000 in number—under the command of General Wolfe, virtually wrenched *La Nouvelle France,* on the "Plains of Abraham," from her first European rulers, by the taking of Quebec. Isle aux Noix, and Forts Oswegatchie and Levis, successively passed into the hands of the British, and then Montreal was beleaguered and taken by General Amherst with an army of 17,000 men. The capitulation of the city, which was signed September 1760, brought to a final close the era of French dominion in Canada. The people of the conquered country were secured, by the terms agreed to, in the free exercise of their religion; and peace was concluded between Britain and France in 1763. The origin of the name is most probably to be found in the assertion that Jacques Cartier, the discoverer of Canada, having heard the natives apply the Indian word Kannatha (village) to their settlements, mistook it for the name of the whole country. In the matter of communications, Canada is unrivalled. The St. Lawrence, with its lakes, puts it in connection at once with the most commercial sections of the United States, and with the open ocean. The navigation of this great water system has been greatly assisted by art. Below Montreal, Lake St. Peter has been deepened, so as to admit vessels of over 1,800 tons burden; and above that city a series of cuts, skirting the rapids, admit sea-going vessels into Lake Ontario. Beyond this, the Welland Canal lifts the maritime navigation round the Falls of Niagara into Lake Erie. Without reckoning, therefore, the American works between Huron and Superior, the Canadian settlement at the foot of Sault Ste. Marie, now a free port, is virtually, as it were, washed by the tide of the Atlantic. There are numerous canals and navigable streams and lakes throughout the province. The chief canal is the Rideau, connecting the River Ottawa with Lake Ontario. Canada has a network of railways of a total length of 6,484 miles. The Grand Trunk, which is one of the longest lines in the world owned by any one company and under one management, has an unbroken line of communication from Portland to Lake Huron and Detroit. The Victoria Bridge, by which this railway crosses the St. Lawrence at Montreal, is one of the wonders of the world. The Canadian Pacific, a trans-continental railroad, was substantially completed in 1885. The Dominion of Canada —Canada, Upper and Lower—has been the most valuable province of British America, and perhaps the most important colony of the United Kingdom. But the name has lately acquired considerable extension of territorial signification. In 1867 an Act for the union of Canada, Nova Scotia, and New Brunswick was passed, and by it these provinces were federally united into one Dominion under the crown of the United Kingdom, with a constitution similar to that of the mother country, and with Ottawa for its capital. All the territory which the Hudson Bay Company held under a charter issued by Charles II. was transferred to the imperial government in December 1869,—the Company receiving an indemnity from the Canadian government of £300,000,—and was, by order of H.M. the Queen in Council, received into the Dominion the following year. The portion of that territory known as Selkirk or Red River Settlement has been erected into the Province of Manitoba. British Columbia became a member of the Dominion in 1871. Prince Edward Island joined the confederation in 1873, and the accession of Newfoundland cannot be long deferred; and then the "Dominion of Canada" will be a phrase synonymous with the historical one, "British North America." This vast territory (3,500,000 square miles) extends from the 53rd to the 141st meridian. There is no State Church in the Dominion. In the province of Quebec, or Lower Canada, the Roman Catholic religion predominates—the great majority of the inhabitants being of French extraction. All the other religious denominations, Congregationalists, Baptists, Methodists, and many miscellaneous creeds, are well represented. The population of Canada is about 5,000,000.

Custom House, Quebec.

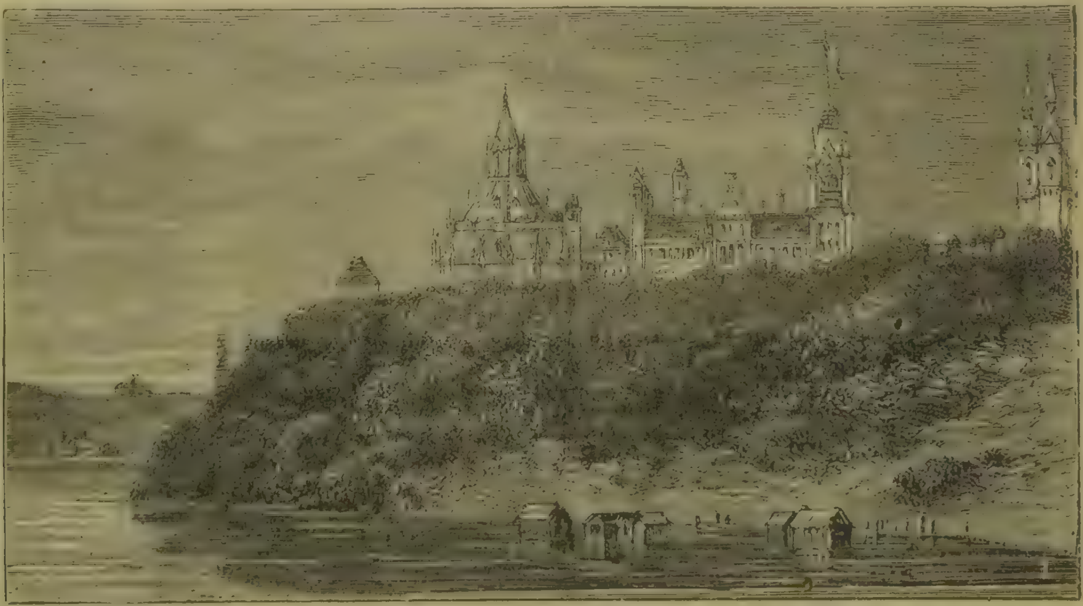
The trade of the Dominion is chiefly with the United States and Great Britain, the greater part of the imports being from the latter country, and the greater part of the exports going to the former. The two staple articles of export to the United Kingdom are breadstuffs and wool. The constitution of the Dominion is after the model of the mother country. The parliament consists of the Queen, an Upper House, styled the Senate, and a House of Commons. The Queen is represented by a Governor-General, who exercises his authority with the aid and advice of a council, styled the Queen's Privy Council for Canada, chosen from time to time by the Governor. The senators are chosen by the Governor-General, and hold the appointment for life. Among other qualifications, a senator must have real property to the value of £800 in the province from which he is appointed. The Speaker of the Senate is nominated by the Governor-General. The duration of the House of Commons is five years. Until the parliament of Canada otherwise provides, the franchise and other regulations are to be the same as those hitherto in force in returning members to the House of Assembly in the several provinces. The House of Commons elects its own Speaker. Any bill passed by the joint Houses of Parliament, even though assented to by the Governor-General in the Queen's name, may afterwards be disallowed by the Queen in Council. Each province has an executive and a legislature of its own, presided over by the Lieutenant-Governor, and constituted in the meantime pretty much as before the union. The lieutenant-governors are appointed by the Governor-General. The provincial parliaments may, under the provisions of the Act, amend from time to time their own constitutions.

Toronto, the capital city of the province of Ontario, Canada, stands on the north shore of Lake Ontario, 165 miles from Kingston, and 333 miles from Montreal. It is over five miles in length between east and west, is bounded on the south by the Bay of Toronto, a spacious inlet of Lake Ontario, and is three miles broad from south to north. The Queen's Park in the west, containing the university, observatory, and handsome private residences, is from 100 to 200 feet above the level of the lake. Population, 86,415. The harbour or bay, about five miles long and one mile in width, is sheltered by an island, formerly a spit of land running into the lake in a south and west direction to the distance of three miles. It is capable of accommodating the largest vessels that navigate the lakes, and is defended at the entrance by a fort, which was thoroughly repaired in 1864 by the imperial government, and is mounted with the most efficient modern ordnance. Toronto deserves to be reckoned among the foremost American cities, and is distinguished for the number of its schools and churches—many of the latter being surmounted by handsome spires. Toronto is a station for five railways—the Grand Trunk, running east and west; the Great Western; the Ontario and Quebec; the Canadian Pacific, and the Northern Railway: the two last named opening up some of the richest districts of the West, and promising to add greatly to the prosperity and importance of Toronto; while during open navigation magnificent steamers ply in all directions on the lake. The name Toronto is supposed to be of Indian origin, but the meaning of the word appears to have been lost. The town was founded in 1794 by Governor Simcoe. It was burned by the Americans in 1813; incorporated as a city in 1834, when its name was changed from York to Toronto; and suffered from fire in 1849. Since then its growth has been rapid, and many fine buildings have been erected.

Montreal, the largest city of Canada and of British America, lies on the left bank of the St. Lawrence, 180 miles above Quebec and 200 below Lake Ontario, 400 from New York, and 2,750 from Liverpool. Its east suburb, which is now an incorporated village, called Hochelaga, was originally the site of an Indian village of the same name, discovered in September 1535, by Jacques Cartier. The westernmost permanent settlement which the French obtained in Canada, it was under them merely an outpost of Quebec, and continued to be such under British rule till 1832, when it became a separate port. Since then the rapidity of its growth has been astonishing. By the deepening of the shallower parts of the river above Quebec, Montreal is now accessible to vessels of over 3,000 tons burden, and drawing from 19 to 22 feet. Situated at the head of the ocean navigation of the St. Lawrence, Montreal has naturally become the depôt for the exports and imports of all the Canadas. At the same time the obstruction to vessels sailing further up the river, caused by the rapids, has been surmounted by magnificent canals. The canals connecting Montreal with Lake Ontario have locks of 200 feet by 45, with 9 feet of water on the sills; the locks of the Welland Canal are rather smaller. As Montreal lies also near the confluence of the Ottawa and St. Lawrence, it is in immediate connection with the vast lumber country adjoining the former river and its tributaries. The position of Montreal as a centre of commerce is perhaps unequalled, and its rapid advance in consequence has placed it, within the last few years, among the first commercial cities of the American continent—second perhaps only to New York. The most conspicuous building in Montreal, which is also the finest church on the American continent, is the Roman Catholic parish church of Notre Dame. Built in the Gothic style of the thirteenth century, it comprises seven chapels and nine aisles, and can accommodate from 10,000 to 12,000 people. It has six towers, of which the two on the main front are 213 feet in height; and its chief window is 64 feet high and 32 broad. Montreal possesses an important university under the name of M'Gill College. Founded by a bequest of the Hon. James M'Gill in 1811, erected into a university by royal charter in 1821, and reorganised by an amended charter in 1852, it has now, besides its principal, the distinguished naturalist, Dr. Dawson, a staff of 29 professors, and has an attendance of upwards of 300 students. Montreal is supplied with water by magnificent works.

Quebec, the most important military position in the Dominion of Canada, is situated on a steep promontory at the junction of the rivers St. Lawrence and St. Charles, in latitude 46° 48′ N., long. 71° 12′ W. It is distant from Liverpool about 2,070 miles, is 180 miles N.E. of Montreal, 503 E.N.E. of Toronto, and 578 N.N.E. of New York. It is connected with all the cities in America by means of the Grand Trunk Railway. The site of Quebec, originally occupied by an Indian village named Stadacona, was discovered by Jacques Cartier in 1535; but the city was founded by Champlain in 1608. It continued to be the centre of French trade and civilisation, as well as of Roman Catholic missions in North America, till 1759, when it fell into the hands of Britain by the memorable victory of Wolfe on the Heights of Abraham above the city. Quebec remained the chief city of Canada till the British settlements in the West were erected into a separate province, when it became the capital of Canada East, now forming the province of Quebec in the Dominion of Canada. The citadel of Quebec is the most formidable fortress on the continent of America. The view which it commands is one of the most magnificent in the world, and the scenery in its neighbourhood, amid which are the Falls of Montmorenci, imparts an additional attraction to the city. A seminary for the education of Roman Catholic clergymen was established in the city in 1636 by M. de Laval de Montmorenci, and was raised by the Queen, in 1854, into a university bearing Laval's name. A Presbyterian college, named after its founder, Dr. Morrin, was instituted in 1862, and affiliated in the following year to the M'Gill University of Montreal. Quebec is the seat of a Roman Catholic archbishop and an Anglican bishop, whose respective cathedrals are among the finest specimens of Canadian church architecture. The Church of Scotland and the principal denominations of dissenters are also represented in the city. From the building yards of Quebec there are annually launched between 30 and 40 vessels of various tonnage. From 1,400 to 1,500 vessels enter the port every year from the ocean, principally to export the produce of the country. The chief export trade is in timber. The principal imports are woollen, cotton, and silk goods; iron, coal, hardware, and salt. On June 9th, 1881, a great fire occurred, in the course of which 537 houses, churches, etc., were destroyed. The Battle of Quebec was fought September 13th, 1759, between the French, under General Montcalm, and the British, under General Wolfe. The battle was fought on the "Plains of Abraham," behind the city; it resulted in favour of the English, and virtually ended the dominion of France in Canada.

New Brunswick.—New Brunswick is north-east of the United States. Its shores are washed by the Gulf of St. Lawrence and the Bay of Fundy. The latter bay is remarkable for having the highest tides in the world. The people of New Brunswick, Nova Scotia, and the other provinces bordering upon the Gulf, are extensively engaged in the fisheries, which form one of their principal sources of wealth.



Parliament Houses, Ottawa.

Towns.—Fredericton, the capital, is on the River St. John, 80 miles from its mouth. The city of St. John, at the mouth of the river, is the largest and most important town.

Nova Scotia and Cape Breton Island.—These form together a single province. The coast contains a great number of fine harbours, promoting the extensive commerce and fisheries, which form the chief business of the people.

Towns.—Halifax, the capital, has a fine harbour, and is the principal British naval station in this part of the world. The chief exports of Nova Scotia and New Brunswick are lumber, fish, coal, grindstones, gypsum (or plaster), grain, potatoes, and hay. Nova Scotia (New Scotland) was first settled by the French, who called it Acadia. During the French and Indian War, it fell into the hands of the English, and many of the inhabitants were driven into exile.

Prince Edward Island was first settled by the French, but was afterwards ceded to Great Britain. Like all the other regions in or upon the Gulf, this province has valuable fisheries. Farming and grazing, however, form the chief occupation of the people. Charlottetown is the capital.

British Columbia.—The coast region is densely wooded, and has a moist and rather mild climate. The plateau east of the Cascade Range is dry, and better for grazing than for agriculture. The leading exports are gold, coal, furs, lumber, and fish. Fraser River is the principal stream, upon whose banks, and those of its tributaries, gold abounds. Vancouver and Queen Charlotte Islands are a part of British Columbia.

Towns.—Victoria, the capital and principal town, is on Vancouver Island. New Westminster is next in importance.

Manitoba is situated in the Red River valley, and is nearly in the centre of North America. The surface consists mostly of level prairie land, with but little timber. The soil is very fertile, and produces large crops, especially of wheat. The climate is cold and dry, and the population is rapidly increasing. Winnipeg is the capital.

Districts and Territories.—The five districts which have recently been organised and the three territories comprise all of British America not included in the eight provinces. They have few towns, and are inhabited chiefly by Indians, Eskimos, and fur traders. Battleford is the principal town.

NEWFOUNDLAND.

The surface is generally rocky and barren. The coast is bold, and indented by deep inlets, which form many excellent harbours. St. John's is the capital, and the only town of any note.

Climate.—The winters are very cold, but the summers are hot. The dense fogs which prevail in this latitude are due to the meeting of the cold Arctic Current with the warm waters of the Gulf Stream. During the spring and summer, icebergs and pack-ice are brought down by the Arctic Current, and drift about until melted. It is for this reason that the steamship route between America and Great Britain is one of the most dangerous in the world.

Productions.—The fisheries form almost the sole wealth of Newfoundland. The exports are fish, oil, and seal-skins. The fish are taken along the shores of the island, and upon shallow places in the sea, called the Banks of Newfoundland. The Grand Bank, which lies farthest to the eastward, is more than 600 miles long, and 250 miles broad.

LABRADOR.—The coast of Labrador is attached to the Government of Newfoundland. Its fisheries are very extensive and valuable.

VEGETATION IN MEXICO.

MEXICO, CENTRAL AMERICA, AND THE WEST INDIES.

See Map, page 542.

THESE countries are included with Spanish America, or that part of the American Continent which was first settled by the Spaniards, and is still occupied by their descendants.

The greater part of Spanish America lies within or near the Torrid Zone. All that portion which borders upon the Pacific contains mountains and tablelands, and therefore exhibits an extraordinary variety of vegetable products. The mineral wealth, particularly in gold and silver, is also very great. Yet such is the indolence of the people, that agriculture is almost wholly neglected, and the mines are imperfectly worked. The rearing of live-stock better suits the idle habits of the people, and many horned cattle, horses, and mules are raised. The cattle are slaughtered principally for their hides, horns, and tallow.

The only portions of Spanish America now in possession of the mother country are Cuba and Porto Rico. The other colonies, in the first quarter of the present century, established themselves as independent republics. Most of them, however, are wretchedly governed; one revolution following another, in endless succession.

Mexico, Central America, and the Isthmus of Panama occupy the narrowest portion of the Western Continent, and afford convenient routes between the Atlantic and Pacific Oceans. Three routes across this section were originally projected: one by the Isthmus of Tehuantepec, in Mexico; another by the way of the river San Juan and Lake Nicaragua, in Central America; the third across the Isthmus of Panama. The latter was, for many years, the principal channel of communication between the oceans by means of the Panama Railroad.

The great railroads to the Pacific coast which have been constructed in late years have, however, diverted much of the travel as well as commerce from this route. A ship canal, across the Isthmus of Panama, about 46 miles in length, has been projected by De Lesseps, the French engineer and successful projector of the Suez Canal.

Inhabitants.—The inhabitants of Spanish America are whites, blacks, Indians, and the mixed races. By far the greater part of the population of Mexico and Central America belong to the Indian and mixed races.

MEXICO.

Coast.—Upon the Gulf of Mexico the coast is flat and sandy, and therefore deficient in good harbours. The shores of the Pacific, however, are more abrupt, and abound with fine harbours, which admit ships of the largest size.

Surface.—The interior consists of tablelands, from 4,000 to 9,000 feet high. They rise abruptly from the Pacific coast, but there is a considerable interval of low land between them and the Gulf of Mexico. From the Gulf, the tablelands were formerly only accessible by a few carriage roads: one by Jalapa, from Vera Cruz, and another by Saltillo, from Matamoras and Monterey, were made lines of attack by the United States army in the war between the two countries. Railroads now connect the coast with the interior. The Sierra Madre crosses the tableland from north to south, and forms a continuation of the Rocky Mountains. The highest mountains in Mexico are a line of single peaks (many of them volcanoes), which cross the southern part of the plateau from east to west. Most of these volcanoes show signs of activity. Popocatepetl constantly emits vapours. Its crater is large, and contains immense deposits of sulphur. The site of Jorullo was formerly a level, cultivated plain. In 1759 a series of violent earthquakes occurred, which continued for several months. Then, without warning, the ground burst, and a fissure, several miles long, formed. Enormous quantities of lava, ashes, and scoria were ejected. Within twenty-four hours, six volcanic cones had been formed, the highest of which is now Jorullo. During the past few years, however, activity has almost wholly ceased, and vegetation now covers the sides of the mountain, nearly to the rim of the crater.

Climate.—The rainy season continues from May till October; the dry season from October to May. Like all tropical countries which contain high and low lands, Mexico exhibits a great variety of climate. In ascending from the coast to the surface of the plateau, we find three regions in succession: the hot, swampy, and pestilential lowlands; the temperate regions, which enjoy a healthful and delightful climate; and the cold, desolate plains above.

Productions.—The vegetable productions vary with the climate—passing through gradual changes, from the lowlands to the surface of the plateau. Thus, Mexico possesses, in the same latitude, the vegetation of all the zones. The oak and pine are found here, as well as the mahogany, ebony, and palm. Wheat and barley are produced in the cooler regions; and cotton, tobacco, the sugar-cane, and many fruits and spices, in the plains and valleys below. Indian corn grows both on the high and low lands. The wood of the mesquite is prized for its fine brown colour. The foliage is an excellent fodder, and is often the only food of the animals which form the numerous pack-trains. The bean of the mesquite is an excellent substitute for the ordinary bean or frijole. It is frequently used as an article of food by the natives. The gum exuding from the bark of certain species of mesquite is similar to gum-arabic. The agave, or American aloe, of which the common century plant is a species, is valuable for its juice, from which a fermented liquor, called pulque, is made. One plant often yields as much as 150 gallons. By distilling the pulque, a strong, spirituous liquor, known as mezquel, is produced. Both are much used in Mexico. The root of the agave is composed, mainly, of starch, which, when heated for several days, is converted into sugar,—the whole forming a mass of delicious, sugary pulp. The fibres of a similar variety yield sisal hemp. There are about forty species of cactus growing in the arid regions of Mexico. Certain species are the home of small bugs, or insects, whose bodies, when dried, constitute the cochineal of commerce. Carmine, a valuable dye, is prepared from cochineal. The cacao-tree produces a bean from which cocoa and chocolate are prepared. Vanilla, the seed, or bean, of a climbing plant, is valuable as a flavour. A hideous lizard, called the Gila monster, is found in the rivers near the coasts. The tarantula is an enormous spider whose bite is poisonous. The centipedes of Mexico sometimes attain a length of ten or twelve inches. The mines of Mexico once yielded immense quantities of gold and silver, but they are now less productive. Iron, copper, and other useful metals have since been discovered, and are mined to a limited extent.

PLAZA, FOUNTAIN AND CATHEDRAL.

Towns.—Mexico, the capital, is situated upon a tableland, 7,000 feet above the sea. The capture of this city by General Scott, in 1847, was the closing event of a war with the United States. Most of the towns in the interior are situated on the tablelands, where the climate is much more healthful than on the swampy regions of the coast. Guanaxuato and Zacatecas, on the highlands, are rich in mines of gold and silver. Mexican houses are nearly all constructed of abode, or mud, moulded into large bricks, and dried in the sun. The roofs are flat, thatched with coarse grass, and then covered with mud. The floors are commonly of hardened earth or cement. Such dwellings, while not remarkable for their beauty, are more comfortable than if built of burnt bricks or of wood. The houses of the better classes are frequently built of stone, the interior being richly frescoed and ornamented. But few houses are more than one story high. Vera Cruz and Tampico are the principal ports on the Gulf of Mexico; Acapulco, San Blas, Mazatlan, and Guaymas are the principal ones on the Pacific coast.

Commerce.—Though Mexico is so rich in natural productions, every branch of industry is neglected. Commerce is, therefore, very limited, and the exports consist of the simplest productions,—gold, silver, cattle, hides, and cochineal.

History.—Fernando Cortez, a Spanish adventurer, conquered the country in 1521. He found there an extensive kingdom, with regular laws, and with cities, temples, public roads, and many of the arts of civilised life. After the conquest, the cruelty of the Spaniards drove the Indians back into a state of barbarism. In 1821 Mexico became independent of Spain, and established, first an empire, then a republican form of government. By the war with the United States, which ceased in 1848, she lost Upper California and New Mexico. Mexico now comprises twenty-seven States, two Territories, and one federal district.

The Peninsulas of Yucatan and Lower California are parts of Mexico but little known. The former is noted for its ruins of ancient temples and cities.

CENTRAL AMERICA.

Central America comprises the five States of Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica, together with the small British colony of Belize or British Honduras. In surface, climate, and productions, the country bears a general resemblance to Mexico. The region included in Central America was discovered by Columbus, in 1502. It was made a Spanish possession in 1525, and so remained for about 300 years. Several times, the republics were united as a confederation, but the union was not lasting. The last attempt was made in 1885, by General Barrios, the President of Guatemala. The attempt was resisted by the other republics, and the civil war which followed ended in the defeat and death of Barrios. The height of the tablelands gradually decreases towards the Isthmus of Panama, where the surface is varied by a chain of low hills. Along the south-western edge of the plateau is a line of volcanoes, which form a part of the great volcanic chain on the Pacific coast of America. The sponge fisheries constitute the chief industry. The sponge of commerce is the skeleton of an animal that resembles a plant, growing from the bottom of the sea. In shallow water, the sponges are detached by means of long-handled shears. In deep water, trained divers are employed. The sponges are first exposed to the hot sun, or buried in sand until the fleshy substance has decomposed. They are then washed, bleached, assorted, and shipped to various parts of the world.

Towns.—The largest city in Central America is New Guatemala, the capital of the State of Guatemala. Tegucigalpa is the capital of Honduras; San Salvador, of Salvador; Managua, of Nicaragua; and San José, of Costa Rica.

WEST INDIES.

The West India Islands consist of three principal groups: the Greater Antilles, the Lesser Antilles, and the Bahamas. The Greater Antilles consist of Cuba, Hayti, Jamaica, and Porto Rico. The Lesser Antilles include the chain of islands which extend from Porto Rico to South America. The Antilles are mountainous, and are supposed to be the remains of a mountain chain, which, at some remote period, connected North and South America. Hayti was formerly a French possession. Prior to the French Revolution, most of the negroes were slaves. In 1793 they revolted and obtained their freedom. At this time, the English attempted to seize the island, but Toussaint l'Ouverture, a brave negro, hastily raised an army, and repelled the invaders. L'Ouverture was appointed governor, and proved to be a statesman of extraordinary ability. Napoleon Bonaparte treacherously attempted to restore slavery; and, seizing L'Ouverture, conveyed him to France, where he died. The attempt was unsuccessful, for the Haytians revolted, and, in 1804, gained their independence. The Bahamas are low islands, of coral formation. Guanahani, one of the Bahama Islands, was the first land of the New World discovered by Columbus.

Climate and Productions.—The climate and productions of the West Indies are tropical. The climate is generally healthful, except in the rainy season. The islands are subject to terrific hurricanes. Sugar, molasses, rum, coffee, tobacco, mahogany, spices, and tropical fruits form the chief exports.

Inhabitants.—The population of the West Indies consists principally of whites and free negroes. About one-third of the inhabitants are white. The negroes were once all slaves, but are now free. A considerable number of Chinese, called coolies, have been taken to some of the islands, to labour upon the plantations.

Most of the West India Islands are in possession of European nations. Cuba and Porto Rico belong to Spain; Jamaica, the Bahamas, and most of the Lesser Antilles, to Great Britain; Hayti is independent; and the remaining islands are owned by France, Denmark, The Netherlands, Sweden, and Venezuela.

Cuba, the "Queen of the Antilles," is the richest of Spain's possessions. It is about as large as the State of Tennessee, and nearly equal in area to all the rest of the West Indies. The extensive foreign commerce of the island is chiefly carried on through Havana and Matanzas. The Cubans have made several unsuccessful attempts to free themselves from the Spanish government. They are permitted to send a representative to the Spanish cortes, or parliament. Since 1880, arrangements for the liberation of the slaves have been gradually carried out. The remains of Columbus are buried in one of the cathedrals of Havana.

Jamaica is a very beautiful and fertile island; but, like the rest of the British West Indies, the amount of her productions and commerce has of late years greatly decreased. Kingston is the largest town.

Hayti embraces two distinct States: the Republic of Dominica or San Domingo, and the Republic of Hayti. The island once belonged to France and Spain. In 1791 the slaves in the western, or French division, rose against their masters, and, after a bloody and cruel war, succeeded in establishing themselves, first as an empire, then as an independent republic. In 1849 Soulouque (who was then President) proclaimed himself Emperor, with the title of Faustin I. After a reign of ten years, Soulouque was deposed, and, in 1859, a republican form of government was again adopted. In 1821 the eastern division revolted from Spain, and formed a republican government. The island is noted for its beautiful scenery and for the fertility of its soil, which is capable of producing every variety of tropical vegetation.

The Bermuda Islands are situated in the Atlantic Ocean, north of the West Indies. They belong to Great Britain. There are about 400 of these islands. Most of them are so small and barren that they have neither name nor inhabitants.

SOUTH AMERICA. *See Map, page 544.*

Position.—South America is the southern part of the Western Continent. It is in the Torrid and South Temperate Zones. It extends from Cape Gallinas, about 12° N., to the Strait of Magellan, 54° S. latitude, and from Cape St. Roque, 35° W., to Cape Parina, 81° W. longitude.

Historical Notes.—South America was discovered by Columbus, in 1498, near the mouth of the Orinoco. The early Spanish discoverers found an Indian village near Lake Maracaybo, built over the water on piles. As it reminded them of Venice, they called it Venezuela, which means Little Venice. Balboa, in 1513, crossed the Isthmus, and was the first white man who saw the Pacific Ocean, from the coast of the Western Continent; but, long before all this, the ancient Peruvians had lived there. They had built strong cities, fine temples, great aqueducts, and splendid roads and bridges, ruins of which still remain. Peru was invaded by the Spaniards, under Pizarro, who cruelly treated the natives, destroying their cities and plundering their temples. South America was thus conquered and settled by Spaniards, except Brazil, which was settled by Portuguese, and Guiana, which was settled by British, Dutch, and French. About 300 years afterwards, the people of the countries of South America (except Guiana) declared themselves independent of Spain and Portugal. Simon Bolivar was the most distinguished general and patriot of South America. He was called the "Liberator of South America."

Size.—It ranks fourth in size among the Grand Divisions. Its area is nearly 7,000,000 square miles. It is about three-fourths as large as North America, and contains nearly one-seventh of the land surface of the globe. Its length from north to south is about 4,700 miles, and its breadth from east to west is 3,200 miles. It has a coast-line of about 17,000 miles.

Outline.—The outline is regular, no large gulfs or inland seas indenting the coast. Like North America, it is triangular in form, with its greatest length toward the Pacific coast.

Surface.—The forms of relief are the Pacific Highland, or the Highland of the Andes, the Atlantic Highlands, and the Great Central Plain. There are three principal mountain systems—the Andes, the Guiana, and the Brazilian systems.

The Highland of the Andes extends from the Isthmus of Panama to Cape Horn. It is a continuation of the Pacific Highland of North America. In Bolivia and Peru these ranges widen out, forming the Bolivian Plateau. Cross-spurs of mountains connect the parallel ranges, inclosing elevated parks similar to those of Colorado. The Andes are, in many places, very steep, with sharp cliffs and precipices, narrow passes, and deep chasms. The scenery is grand and beautiful. Here travel and trade are conducted, chiefly, on the backs of horses, mules, and llamas, and, sometimes, in chairs strapped to the backs of Indians. Chasms are crossed on suspension-bridges made of rope or of wire. Among the peaks which are more than 20,000 feet above the level of the sea are Sahama, Chimborazo, and Sorata; and volcanoes Gualateiri and Arequipa. Over 18,000 feet in height are the volcanoes Atacama, Antisana, and Cotopaxi. The height of the snow-line, above which the mountains are covered with perpetual snow, is, in the tropical regions, 15,000 to 18,000 feet; in Central Chili, 8,000 feet; and in Southern Chili, 3,000 feet.

The volcanoes of the Andes are among the most interesting physical features of the continent. There are several hundred extinct craters, and a large number that show constant signs of activity. The region of volcanic activity is, also, subject to violent earthquakes. In 1868 a series of earthquakes occurred, during which the cities of Tacna, Iquique, Arequipa, and Arica were destroyed.

The Atlantic Highlands are the Brazilian Highland and the Guiana Highland.

The Brazilian Highland is a broad plateau region crossed by mountain ranges of moderate elevation approximately parallel. It occupies nearly one-fourth of South America, and has an average elevation of 2,500 feet. The loftiest peaks are in the coast ranges, and are from 5,000 to 10,000 feet high.

The Guiana Highland is a plateau traversed by short, broad mountain ranges of medium height. It forms the divide between the basins of the Orinoco and Amazon rivers. Its most remarkable summit is Mount Roraima, a broad, flat-topped mountain, about 8,000 feet high, surrounded by perpendicular precipices; so that it is almost impossible to ascend to the top.

The Great Central Plain extends eastward from the Pacific Highland to the Atlantic Ocean, except where it is interrupted by the Atlantic Highlands. It occupies about one-half of South America, and comprises the basins of the Orinoco, the Amazon, and the La Plata. It is chiefly an alluvial region. Its divisions are the Llanos, or treeless plains, of the Orinoco; the Selvas, or forest plains, of the Amazon; and the Pampas, or grassy plains, of the La Plata. The Llanos, at the close of the wet season, are covered with rich grass; but in the dry season the lakes and the pools are dried up, the vegetation is withered, and hot winds sweep clouds of dust over the parched and desolate plains. The Selvas are copiously watered throughout the year, and are nearly covered with forests, which are among the largest and densest in

PRIMITIVE BRIDGE IN THE ANDES
BRIDGE IN THE ANDES

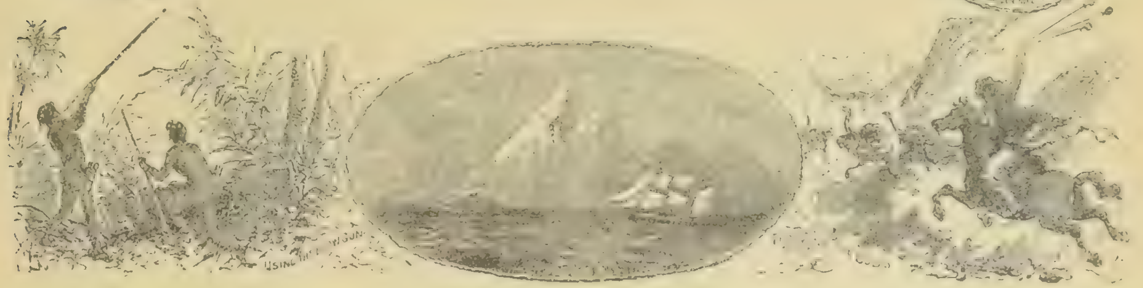
NOTES ON SOUTH AMERICA

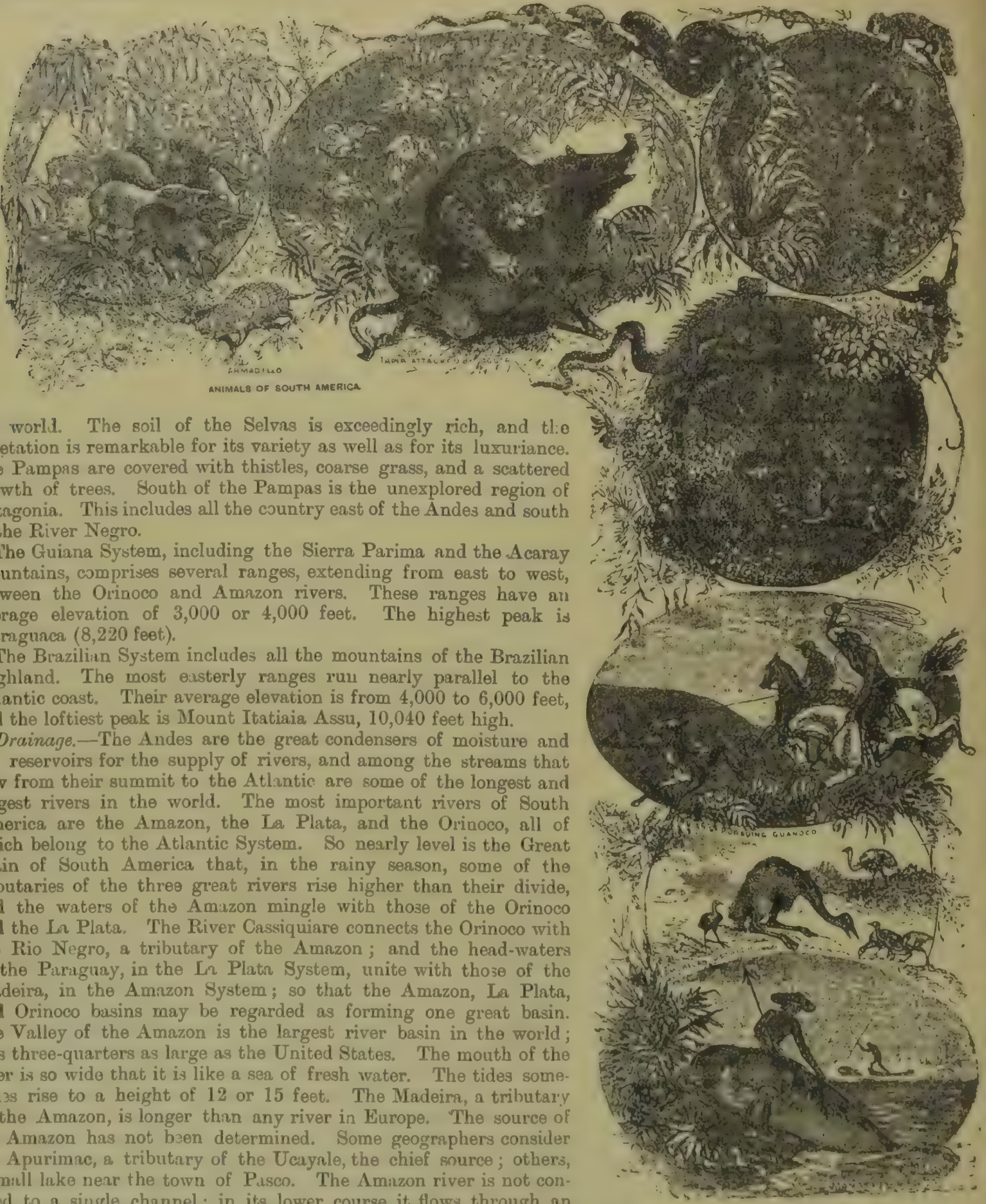
History.— The mainland of South America was discovered by Columbus on his third voyage, in 1498. The part of the coast at which he landed was near the mouth of the Orinoco River. The brilliant success of Cortez in the conquest of Mexico incited other Spanish adventurers to similar enterprises, through which gold and glory might be gained. Among these was Pizarro, who accomplished the conquest of Peru, then inhabited by people who had attained a considerable degree of civilization. Brazil, occupied by the Portuguese in 1549, fell successively under the dominion of Spain and Holland, but was finally recovered by Portugal in 1564. In the mean while, nearly the whole of the northern and western parts of South America had been overrun by the Spaniards. Early in the present century the Spanish colonies of South America threw off the yoke of the mother-country, and became independent republics. Brazil, formerly belonging to Portugal, in 1822 was proclaimed an independent empire, and in 1889 became a federal republic.

Social Condition.— In civilization, the South-American countries occupy a secondary place. Among the masses of the population, education is little diffused; but there are numerous schools for the wealthier classes, and the secondary or higher education is well provided for. In some of the republics, political changes are frequent,—a fact that greatly retards the progress of these states. There are but few manufactures in the South-American countries; but they supply the world with immense quantities of coffee, sugar, cotton, tobacco, caoutchouc, cattle products, dye-woods, drugs, spices, and fruits. The means of interior communication are extremely rude. In the Andes countries, transportation is effected almost entirely by pack-animals. Recently, however, considerable progress has been made in railroad construction in various parts of South America, and there are now one or more railroads over the Andes.

Among the characteristic and most valuable products of South America may be mentioned the diamond, which is extensively mined in Brazil by the process of washing, as shown in the cut, and the digging of guano, immense deposits of which are found on the Chincha Islands off the coast of Peru.

The Isthmus and Cape Horn.— These two extremes of South America possess a peculiar interest. The Isthmus of Panama forms here the narrow barrier between the Atlantic and Pacific oceans, and in consequence of this obstacle the world's maritime commerce is required to perform the prodigious circumnavigation of the continent, a distance of ten thousand miles. Various projects of cutting an inter-oceanic canal across the isthmus engage public attention. In the mean time communication is had by a railroad—perhaps the most important short railroad in the world—from Panama to Aspinwall, known commercially as Colon, the Spanish form of the name Columbus. Cape Horn Island, or Cape Horn, is a precipitous rock forming the southernmost of the Tierra del Fuego Islands. This southern extremity of South America is a gloomy region of fogs, rains, and storms.





ANIMALS OF SOUTH AMERICA

the world. The soil of the Selvas is exceedingly rich, and the vegetation is remarkable for its variety as well as for its luxuriance. The Pampas are covered with thistles, coarse grass, and a scattered growth of trees. South of the Pampas is the unexplored region of Patagonia. This includes all the country east of the Andes and south of the River Negro.

The Guiana System, including the Sierra Parima and the Acaray Mountains, comprises several ranges, extending from east to west, between the Orinoco and Amazon rivers. These ranges have an average elevation of 3,000 or 4,000 feet. The highest peak is Maraguaca (8,220 feet).

The Brazilian System includes all the mountains of the Brazilian Highland. The most easterly ranges run nearly parallel to the Atlantic coast. Their average elevation is from 4,000 to 6,000 feet, and the loftiest peak is Mount Itatiaia Assu, 10,040 feet high.

Drainage.—The Andes are the great condensers of moisture and the reservoirs for the supply of rivers, and among the streams that flow from their summit to the Atlantic are some of the longest and largest rivers in the world. The most important rivers of South America are the Amazon, the La Plata, and the Orinoco, all of which belong to the Atlantic System. So nearly level is the Great Plain of South America that, in the rainy season, some of the tributaries of the three great rivers rise higher than their divide, and the waters of the Amazon mingle with those of the Orinoco and the La Plata. The River Cassiquiare connects the Orinoco with the Rio Negro, a tributary of the Amazon; and the head-waters of the Paraguay, in the La Plata System, unite with those of the Madeira, in the Amazon System; so that the Amazon, La Plata, and Orinoco basins may be regarded as forming one great basin. The Valley of the Amazon is the largest river basin in the world; it is three-quarters as large as the United States. The mouth of the river is so wide that it is like a sea of fresh water. The tides sometimes rise to a height of 12 or 15 feet. The Madeira, a tributary of the Amazon, is longer than any river in Europe. The source of the Amazon has not been determined. Some geographers consider the Apurimac, a tributary of the Ucayale, the chief source; others, a small lake near the town of Pasco. The Amazon river is not confined to a single channel; in its lower course it flows through an intricate network of minor channels. At all seasons of the year, canoe portage is possible between the Amazon and the Orinoco. Among American rivers, the Rio de la Plata ranks next to the Amazon and the Mississippi in the extent of its basin. Only a few rivers of the Eastern Continent have larger basins than the La Plata. Many of the tributaries of the La Plata are navigable nearly to their sources, and the country drained by them is of remarkable fertility. Besides the three great rivers in South America, there are the Magdalena, the San Francisco, the Rio Negro (of the Argentine Republic), the rivers of Guiana, and many other important streams, all of which add largely to the commercial and agricultural resources of the countries through which they flow. The western slope of South America is steep and narrow, and only small mountain torrents flow into the Pacific. A desert region fringes the coast north of 26° S. latitude.

There are but few permanent lakes of large size in South America. With the exception of Lake Titicaca and Lake Maracaybo, they are more like vast morasses than like lakes. Lake Titicaca is about half as large as Lake Erie, and is, with the exception of Sir-i-Kul (a small lake in Asia), the highest lake in the world. Its waters flow into a river which discharges into a smaller lake, but has no outlet to the sea. Lake Maracaybo is, properly speaking, a gulf or bay, being an inlet of the Caribbean Sea. Many of the South American lakes are mere marshes or pools during the dry season; but in the rainy season they spread out into vast shallow sheets of water, flooding the surrounding country and adding to its fertility.

Climate.—South America lies chiefly in the Torrid Zone, and, in about three-fourths of its area, it has a tropical climate. The lowlands within the Tropics are hot, and the easterly trade-winds, laden with moisture from the Atlantic, supply abundant rain, which, added to the evaporation from the vast river surface, makes the climate damp and unhealthful. The climate of the highlands depends partly upon their latitude and partly upon their altitude. The high tablelands of the Andes have a cool and delightful temperature at all seasons, and, for this reason, there are many large cities in the elevated valleys. In like manner, all the plateaus have their climate modified by their elevation. South of the Tropics, the climate is that of the Temperate Zone. In the extreme south the Antarctic currents and the wind from the icy summits of the Andes make the country very cold. Cape Horn is a bleak region of fogs, rains, and storms; and, in the Strait of Magellan, snow falls almost every day. The rainfall of South America is regulated, to a great degree, by the Andes. They condense upon their eastern slopes the moisture of the prevailing winds from the Atlantic; hence, on the Pacific side there is an extensive rainless tract. South of 30° S. latitude, westerly winds prevail, and their moisture is precipitated on the western slope of the Andes, leaving the eastern slope comparatively dry. The coast-ranges of Brazil partly intercept the moisture of the easterly winds, and in the interior the Brazilian Highland has less copious rains than its coast regions have.

LIMA, CAPITAL OF PERU.

Productions and Animals.—In luxuriance and variety of vegetation, South America is not surpassed by any country in the world. This is due to the great heat and abundant moisture. The forests abound in gigantic palms, tree-ferns, and bananas; in rosewood, mahogany, logwood, Brazil-wood, and caoutchouc (from whose sap india-rubber is made); and in many other valuable trees, useful for the timber or for the dye stuffs that they yield. Coca, sarsaparilla, ipecacuanha, and other medicinal plants of great value are found in various regions. Coffee and sugar are exported in great quantities. There is an inexhaustible supply of food plants and tropical fruits, and of resins, spices, gums, and perfumes. The india-rubber tree, when tapped, gives out a milky juice, which is received in a clay cup, or jar, placed at the incision in the trunk. The juice is dried and coloured black by exposure to the heat and smoke of a fire. The ivory-nut contains a fluid which hardens into a substance resembling ivory. The cacao-tree bears beans, or seeds, from which chocolate and cocoa are made. Chocolate is a paste composed of the roasted kernel, ground and mixed with sugar and cinnamon, or vanilla. The cocoa-palm bears cocoa-nuts. Cinchona is a kind of tree which grows exclusively on the Andes. It was so named from the wife of Count Cinchon, Viceroy of Peru, in the seventeenth century, who, by its use, was cured of intermittent fever. From its bark, called Peruvian bark, quinine is made. Manioc flour is prepared from the root of the cassava plant. The dried pulp, when ground, is an excellent substitute for flour. The milky fluid, when left to stand, deposits a fine starch, which, when washed and dried, is the tapioca of commerce. Immense herds of cattle, horses, and sheep are pastured on the great plains, and stock-raising is an important industry. The most important metals are gold, silver, platinum, copper, iron, and tin. Coal, sulphur, nitrate of soda, and saltpetre abound in various localities. Valuable deposits of guano are found on the islands near the Pacific coast. Brazil is rich in diamonds, rubies, emeralds, topazes, sapphires, and other precious stones. The animals of South America include the puma, the jaguar, the ocelot, the tapir, the monkey, the boa, the alligator, the iguana, the basilisk, the armadillo, the sloth, the alpaca, and the llama. In the mountain regions the llama is used as a beast of burden. The lowlands are infested with reptiles and insects of great variety, and venomous snakes, scorpions, centipedes, and spiders make some regions uninhabitable. The beasts of prey, though numerous and formidable, are inferior in size, strength, and ferocity to those of Asia and Africa. The boa-constrictor often attains a length of 30 feet. The South American monkeys are small; and, unlike the monkeys of the Old World, have prehensile tails. The peccary is a species of wild hog, very savage in its nature. The ant-eater is noted for its long, worm-like tongue, which is covered with a viscous fluid. This fluid attracts the ants, and they cluster upon the tongue of the animal, which quietly makes a meal of the unwary insects. The armadillo is so named from the horny scales which constitute an effectual armour for its body. When attacked, it rolls itself into a ball. It burrows in the earth, where it remains during the daytime. The vicuna and alpaca are valuable for their fine, woolly hair, used in making delicate fabrics. They resemble the guanaco and the llama. The llama, a species of sheep, resembles a camel. It is used as a beast of burden. Reptiles are animals which creep, such as snakes, lizards, etc. The tapir resembles a pig, but is much larger, and has a short proboscis. The tapir of South America is all black, while that of Asia is partly white or light coloured. Many of the birds and insects of South America are remarkable for their brilliant colouring. Parrots, humming-birds, and butterflies of large size and great beauty abound in the forests. On the Andes the condor, the largest of all flying birds, is found. The nandu, or American ostrich, roams on the treeless southern plains. The domestic animals, except the alpaca, llama, and dog, were originally of European stock, brought into the country by the Spanish settlers.

Inhabitants.—The population is over 30,000,000, and consists of whites, Indians, negroes, and mixed races. The whites, who form but a small proportion of the population, are chiefly the descendants of Spanish and Portuguese settlers. The negroes were brought into the country for slaves, but all of them have been freed. The Indians of the settled states are an inoffensive people, and in some places perform most of the labour of the country. In the interior, however, there are many fierce and savage tribes.

History.—Columbus landed at the mouth of the Orinoco River, in 1498. European nations soon took possession of South America. Brazil was settled by the Portuguese; Guiana, by the Dutch and French; and the rest of the country, by the Spanish. In the first quarter of the present century the Spanish colonies, after a long and severe struggle, threw off the yoke of Spain, and established themselves as independent republics. Brazil, in 1822, effected a peaceable separation from Portugal, and the son of the King of Portugal was made Emperor of Brazil. In 1889 the reigning emperor was deposed, and the form of government was changed to that of a republic.

Religion.—The people of South America are chiefly Roman Catholics, except in British and Dutch Guiana, where the Protestant religion prevails.

POLITICAL DIVISIONS.

South America includes ten Republics:—The United States of Brazil, Venezuela, United States of Colombia, Ecuador, Peru, Bolivia, Chili, Uruguay, Paraguay, and the Argentine Republic; also the colonies of British, Dutch, and French Guiana.

VENEZUELA, UNITED STATES OF COLOMBIA, ECUADOR, AND PERU.

These States are much alike in the character of their surface, climate, and productions. Each of them is divided into three distinct regions: the narrow plain on the coast; the mountains and plateaus in the centre; and the great plains which stretch from the Andes into the interior. The climate on the coast of Venezuela, Ecuador, and the United States of Colombia is hot, moist, and exceedingly unhealthful. The coast of Peru is dry and barren, for the prevailing winds blow from the south-east, and the lofty mountains in this State intercept the rain-clouds in their passage from the Atlantic Ocean.

The largest towns in this region are in the interior, and are generally situated on the tablelands, where the climate is cool and healthful. Owing to the mountainous character of the country, communication between the towns of the coast and of the interior is difficult, and commerce very limited. Travelling among the mountains is often extremely difficult and dangerous. There are scarcely any carriage roads; travellers and goods are carried by mules, or on the backs of men. The traveller sits in a chair which is slung upon the back of the Indian porter; and in this manner they cross the most frightful chasms, often upon the slippery trunk of a tree, where a single false step would be fatal.

VENEZUELA.—The greater part of this State is included within the Llanos, or plains of the Orinoco. No white man has ever reached the source of this great river, which flows through a wilderness of forests and plains. Upon the banks dwell a tribe of savages, who partially subsist upon balls of clay. They are called the "dirt-eaters of the Orinoco." La Guayra is the principal seaport. Caracas, the capital, is among the mountains. Margarita, a small island of the West Indies, near the coast, belongs to Venezuela. Margarita (which means "a pearl") was once famous for its pearl fisheries.

UNITED STATES OF COLOMBIA.—The Andes are divided, in this Republic, into three chains. Down the valleys between them flow the Magdalena and Cauca, the principal rivers of the country. Cartagena is the principal sea-port. Aspinwall and Panama, on opposite shores of the Isthmus of Panama, are connected by a railroad. Bogota (the capital) and Popayan are on lofty tablelands in the interior, several thousand feet above the sea. Bogota, although within four and a half degrees of the Equator, has a climate of perpetual spring, due to its altitude of nearly 9,000 feet. Its wet seasons are our spring and autumn; its dry seasons, our summer and winter. It is warmest in February, and coldest in December. Grain is sown twice a year. Most of the houses are built but one story high, owing to the frequency of earthquakes. There are, however, many large, splendid buildings.

ECUADOR is crossed by the Equator, and derives its name from that circumstance. It contains Chimborazo, Cotopaxi, and several more of the famous volcanoes of the Andes. Quito, the capital, and largest city, is situated on an elevated plain, almost directly under the Equator. Guayaquil, on the gulf of that name, is the principal seaport.

PERU, though now of little importance among nations, is remarkable for its history. At the time of the discovery of the New World, Peru, like Mexico, was inhabited by Indians, who were considerably advanced in civilisation. They were governed by a race of princes called Incas, whose empire extended along the Andes, from the United States of Colombia to the southern boundary of Chili. Pizarro, a bold Spanish adventurer, had heard of the wealth of Peru, and the great abundance of its gold and silver. With a small band of fierce and brave followers, he entered the country, took possession of the empire and treasure of the Incas, and Peru thus became a part of the Spanish possessions. The Lobos and Guanape Islands, which lie on the coast, belong to Peru. They are of great value for the immense quantity of guano found upon them. It is exported to Europe and the United States, for manure. Lima, the capital of Peru, and one of the largest cities west of the Andes, is situated in a fine river valley. Callao is the principal seaport. Among the mountain-towns are Cerro Pasco, famous for its silver mines; Cuzco, the capital of the ancient Peruvian monarchy; Arequipa, and Huamanga.

The exports of this section of South America are made principally from La Guayra and Cartagena on the Caribbean Sea, and Guayaquil and Callao on the Pacific Ocean. From La Guayra are shipped coffee, cotton, sugar, cocoa, indigo, and hides; from the other ports, gold and silver, hides, some tobacco, cotton, and Peruvian bark.

CENTRAL AMERICA.—GOING INTO TOWN.

BOLIVIA.

Bolivia was named in honour of General Bolivar, under whose guidance the people threw off the yoke of Spain. The foreign trade is carried on principally through Peru and the Argentine Republic, but communication is so difficult, that few of the products will pay the cost of transportation to the coast. Potosi stands on the side of a mountain, at the height of 13,350 feet above the level of the sea, and is said to be the highest city in the world. The silver mines of Potosi are estimated to have yielded the value of £320,000,000 since their discovery; but though they are nearly as rich as ever, they are not now worked for want of proper enterprise. La Paz, the nominal capital and largest town; Sucré, at which place the Legislature frequently meets; and Cochabamba, the second town in size, are on the high tablelands of the interior.

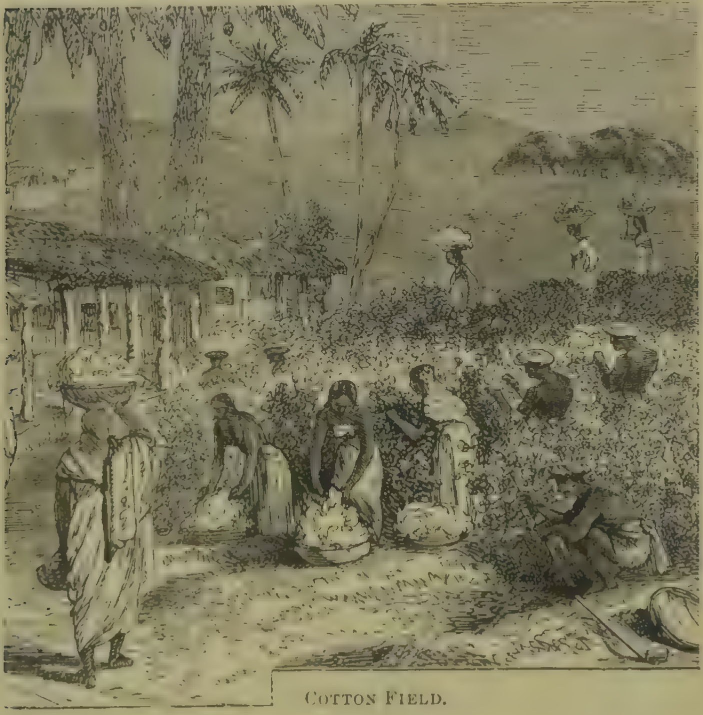
CHILI.

Chili lies wholly upon the western side of the Andes. The greater part of the country is covered with hills, which branch off from that great chain, and diminish in height as they approach the coast. The most fertile districts of Chili are in the central part of the country. Towards the north, the hills become more naked and barren, and finally merge into the Desert of Atacama.

One of the Juan Fernandez Islands, 400 miles from Chili, is famous for having been the solitary residence of Alexander Selkirk, a Scotch sailor. His life and adventures in this lonely spot are supposed to have given rise to the story of Robinson Crusoe.

The climate of Chili is temperate, except in the extreme southern part, and remarkably healthful. The rains fall in the winter months, from June to September, and the country is soon covered with wild flowers and verdure.

The Chilians are more active and intelligent than the other inhabitants of Spanish America, and are making considerable advancement in their state of society. They have already built about 600 miles of railroad. The Araucanians are a bold and warlike tribe of savages, inhabiting a distinct territory in the central part of Chili. They are a noble race; and, by their singular valour, have always maintained their independence of Spanish rule. Santiago is the capital of Chili. Valparaiso is the principal seaport, and the most important city on the western coast of South America. Copper and other metals are exported in considerable quantities from Copiapo and Tongoy. Wheat is also an important article of export. Punta Arenas is a noted port.



Cotton Field.

THE ARGENTINE REPUBLIC.

The Argentine Republic consists of a number of States united under a government modelled after that of the United States. The people are intelligent and progressive, and have built more miles of railroad than any other South American country.

Except in the north-east, the country is too dry for tillage, and is treeless; but is well adapted for grazing, and sustaining vast herds of horses and cattle. The herdsmen, called *gauchos*, are a wild, desperate class of men, and are among the best horsemen in the world. Buenos Ayres, the capital, is the largest city in the Southern Hemisphere, and one of the most important commercial cities in South America. Parana is rapidly increasing in population. Rosario has of late years become a commercial mart of much importance. Mendoza is the centre of trade between the Argentine Republic and Chili.

Patagonia is a sterile country, inhabited only by native tribes of Indians. The Patagonians are a tall and muscular people, many of whom are more than six feet in height. They subsist upon their herds of cattle, and by hunting. The Argentine Republic established its claim to jurisdiction over Patagonia and a part of Tierra del Fuego in 1881. Tierra del Fuego is the most southern part of the inhabited world, and is peopled by a race of miserable savages, who live chiefly by fishing. They are probably the lowest human creatures in the world. The Falkland Islands, off Patagonia, belong to Great Britain. Great numbers of wild cattle find pasturage there, and seals are hunted for their fur.

URUGUAY.

This republic occupies the southern part of the Brazilian tableland, and consists of high, rolling plains, destitute of trees. The rearing of cattle is almost the only occupation of the people. Montevideo is the capital, and the only town of importance.

PARAGUAY.

This country, situated far in the interior, has hitherto had but little communication with foreigners. It is the only country in South America, except Bolivia, having no sea-coast. Asuncion is the capital. Mate, or Paraguay tea, is the dried leaf of an evergreen tree which grows in great abundance in Paraguay. A beverage made from this tea is a favourite drink in South American countries.

Paraguay is situated in the Torrid and South Temperate Zones, and is naturally fitted for the production of the various plants of those regions. Agriculture, and other branches of industry, are, however, very backward, and mate is almost the only export of importance. The exports of the countries occupying the basin of the Rio de la Plata are principally made from the cities of Buenos Ayres and Montevideo. They consist mainly of hides, horns, bones, tallow, and wool.

INDIA-RUBBER TREES.

THE UNITED STATES OF BRAZIL.

The central and eastern regions of this immense country form a low tableland, crossed by mountains, which seldom rise more than 2,000 feet above its level. The lowlands of the interior and on the coast are excessively moist and hot. The tablelands and the provinces of the south have a milder and drier climate. Brazil is one of the richest countries in the world, in its natural productions. Its commerce is very extensive, especially with the United States. The gold mines are productive, and many of the diamonds now in use came from Brazil. The exports are coffee, hides, sugar, rice, cotton, rosewood, caoutchouc (or india-rubber), Peruvian bark, tapioca, and many other articles. Caoutchouc and Peruvian bark are brought down the Amazon, and are shipped from Pará. Brazil has about 4,000 miles of railroad in operation, and several new lines and extensions are in process of construction. Ocean telegraph cables connect Brazil with Portugal and the United States. Rio Janeiro, the capital, is one of the largest cities in South America. It is the greatest coffee-market in the world, and has one of the finest harbours. Bahia, Pernambuco, Maranham, and Pará are also large and important commercial cities. The towns in the interior are small, and of but little note.

GUIANA.

GUIANA is a low and fertile region, with a climate and productions wholly tropical. The heat is very great. It is divided into British, Dutch, and French Guiana. Georgetown is the capital of the British; Paramaribo, of the Dutch; and Cayenne, of the French portion. The exports are sugar, rum, coffee, cocoa, indigo, and tropical fruits.

EUROPE. *See Map, page* 531.

Position.—Europe is the north-western division of the Eastern Continent. It is partly in the North Temperate and partly in the North Frigid Zone. It extends from about 36° 30′ N. to 71° N. latitude, and from about 68° E. to 9° W. longitude.

Size.—Europe is the smallest of the Grand Divisions. It has an area of about 3,800,000 square miles. Its length from Cape St. Vincent to the Ural Mountains is about 3,400 miles, and its breadth from North Cape to Cape Matapan about 2,400 miles. Its coast-line is more than 20,000 miles in length—greater in proportion to its area than the coast-line of any other Grand Division.

Outline.—The outline of Europe is more irregular than that of any other Grand Division. Large gulfs and seas penetrate far into the interior, forming extensive peninsulas, modifying the climate and thereby affecting the productions, and affording unequalled advantages for commercial intercourse. The peninsulas of Europe occupy about one-fifth of its area, and the numerous islands on the coasts have an area equal to about one-twenty-fifth of the mainland.

Surface.—Europe consists mainly of two great divisions—Highland Europe, in the south; and Lowland Europe, in the central and eastern parts. The Carpathian, the Riesen Gebirge, and the Hartz Mountains extend nearly to the North Sea, and form the dividing line between the mountainous region and the vast low plain.

Highland Europe includes the Spanish Plateau, the Central Plateau, the peninsulas of Italy and Greece, and the Plateau of the Balkans. The Spanish Plateau is the most important plateau in Europe. Its average elevation is between 2,000 and 3,000 feet, and the highest point is Mount Mulahacen, a peak of the Sierra Nevada. All the active volcanoes of Europe are in the Mediterranean islands and peninsulas. The low river plains between the mountain ranges within the limits of Highland Europe are remarkable for their productiveness. The Plain of the Po is called "the garden of Europe."

Lowland Europe, or the Great Plain, extends from the Bay of Biscay to the Ural Mountains, and from the Arctic Ocean to the Black Sea. It includes the Northern, Eastern, Southern, and Western Plains; the Russian and Ural Plateaus; and part of the Danube River Valley. The British Isles, with their extensive mining region, are the continuation of the great continental plain, separated from the mainland only by a very narrow strait. The Scandinavian Peninsula has a low plain in the east, and in the west a plateau with a steep descent to the Atlantic coast.

Europe is crossed from east to west by a great mountain system, which is continued in Asia to the Pacific Ocean. The Sea of Marmora and the Archipelago occupy the only break in this immense highland. The principal ranges of the European system are the Cantabrian Mountains, the Pyrenees, the Cevennes, the Alps, the Dinaric Alps, the Balkans, the Carpathian, the Crimean, and the Caucasus Mountains. The only mountains of importance not connected with this system are the Ural and the Scandinavian Mountains. The highest peak in Europe is Mount Elburz, in the Caucasus Range.

The Alps are the highest mountains within Europe, and the most famous of all the mountain systems in the world. They are renowned for their historic and poetical associations, as well as for the beauty and grandeur of their scenery. Their lakes, glaciers, and varied rock formations are of peculiar interest to scientific students and explorers. Numerous passes in the mountains afford great facilities for travelling, and every year thousands of tourists visit the Alpine regions. The Alps are from 10,000 to 12,000 feet high; the Cantabrians and Pyrenees, 8,000; the Carpathian Mountains, 7,000; and the Balkans, 5,000. The loftiest peak of the Alps is Mont Blanc.

Drainage.—The Atlantic Ocean and its branches receive most of the rivers of Europe. The Volga and the Ural flow into the Caspian Sea, which has no outlet. The Dwina and the Petchora belong to the Arctic system. The Alps and the Valdai Hills are the sources of most of the rivers of Europe. The former, with their snow-covered summits and great glaciers, are reservoirs for many streams flowing in all directions. The largest of these are the Danube, the Rhine, and the Rhone, which have their head-waters very near one another. The Po drains the southern slopes of the Alps. Although the Valdai Hills are low, the longest rivers of Europe, the Volga and the Don, rise among them. The rivers of Europe are not so long as the rivers of America, but they are more numerous, and, as many of them are navigable through the greater part of their course, they are very important commercially. The Volga is connected by canals with the White Sea, the Black Sea, and the Baltic, and its facilities as a commercial route are thereby largely increased. The largest lakes are in Russia and Sweden, in the region surrounding the Baltic Sea. The Alpine lakes are comparatively small, but they are of great depth, and are famous for the beauty of their scenery. The British Isles contain a number of small and exceedingly picturesque lakes.

Climate.—Europe exhibits great variety of climate, from semi-tropical warmth to Arctic cold. Southern Europe, protected by mountain chains from the cold winds of the north, and open to hot winds from the African desert, has an almost tropical climate, except in the mountainous regions. The summers are long, the winters mild and short, and the climate, in general, is delightful. Naples, with its orange groves and luxuriance of evergreen vegetation, presents a marked contrast to New York with its long, icy winter, yet the two cities are in the same latitude. In Eastern Europe the winters are very cold, even as far south as the Black Sea, and the summers are very hot. On the western coasts, westerly winds and the influence of the Gulf Stream render the climate milder and more uniform than that of regions farther inland. In England the grass is green throughout the year, and there are, as a rule, no extremes of temperature; while in Russia, in the same latitude, the country is buried in snow in winter and parched in summer. The Atlantic coast of Europe is much warmer than that of America in corresponding latitudes; and, while dry, cold winds and the Arctic current render Labrador treeless and frozen, warm winds from the ocean and the warm waters of the Gulf Stream make the British Isles moist and mild and fertile. Again, the harbour of Hammerfest, the most northerly town in Europe, is never frozen, while Greenland, in the same latitude, is a field of perpetual snow and ice. The rainfall is abundant, particularly on the western coasts and in the warm southern countries. The steppes (treeless plains) are dry and cold; the tundras (mossy swamps) are frozen during the greater part of the year.

Productions and Animals.—Europe is rich in the productions of the Temperate Zone, and is well supplied with useful minerals. On the shores of the Mediterranean the olive, the almond, the orange, the lemon, the fig, the walnut, the chestnut, and the mulberry (whose leaves feed the silk-worm) grow in abundance. Rice, cotton, and beet-root (from which sugar is made) are extensively cultivated. The cork-oak is indigenous to Southern Europe. In Central and Southern Europe vine-culture is an important branch of agriculture. Wheat and the other grains of the Temperate Zone are abundant. Rye, oats, barley, and potatoes are raised even north of the Arctic Circle. Hemp and flax are important productions in Russia and in parts of Central Europe. The ilex, the myrtle, the laurel, and other evergreen plants are found in Southern Europe; the deciduous trees of the Temperate Zone, in Southern and in Central Europe; and the pine, the fir, and the spruce, in Northern Europe, and in all the higher mountain regions.

ANIMALS OF EUROPE.

The metals are found chiefly in the mountainous regions. Gold and silver occur in many places, but in comparatively limited quantities. Iron, copper, tin, zinc, nickel, lead, coal, and salt exist extensively. The Ural Mountains yield platinum, and Spain has rich mines of quicksilver. Southern Europe is noted for the fineness and variety of its marbles, and Great Britain for its slate and coal. Diamonds are found in the Ural Mountains, and opals and garnets of great beauty in Austria-Hungary.

Domestic animals are reared in all parts of Europe, and the dairy products of various sections are of great value. Several varieties of deer, hares, foxes, and wild boars are found in the forests, and fur-bearing animals abound in the colder regions. The Alps and the Pyrenees have the brown bear, the chamois, and the ibex; Russia has the elk and the wolf; Northern Europe has the eider-duck, and Southern Europe raises the valuable silk-worm. The cod, herring, mackerel, salmon, sardine, and sponge fisheries are famous.

Inhabitants.—The population is about 345,000,000, which is larger in proportion to the area than that of any other Grand Division. Most of the people are of the Caucasian race. The Finns, the Laplanders, the Turks, and the Magyars of Hungary, are a mixture of the Mongolian with other races.

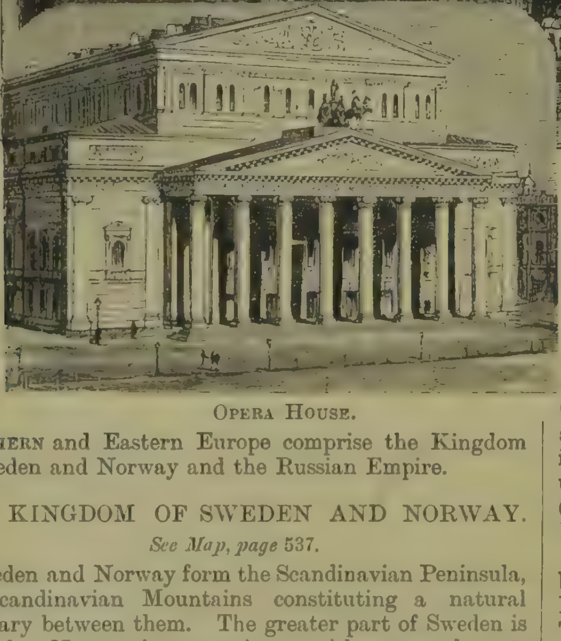
Religion.—Christianity is the prevailing religion. The Turks and some tribes of Southern Russia are Mohammedans; and in many countries there are numbers of Jews. The people of Russia and Greece belong chiefly to the Greek Church. Most of the inhabitants of Southern Europe, Austria, Belgium, and Ireland, and about one-third of the people of Germany and Switzerland, are Roman Catholics. Protestants are most numerous in Great Britain, The Netherlands, Denmark, Sweden, and Norway.

POLITICAL DIVISIONS.

Europe comprises four empires, Russia, Austria-Hungary, Germany, and Turkey; twelve kingdoms, Great Britain, Norway, Sweden, Denmark, The Netherlands, Belgium, Spain, Portugal, Italy, Greece, Servia, and Roumania; and two republics, France and Switzerland. There are also the small republics of Andorra in the Pyrenees and San Marino on the western coast of the Adriatic, and the principalities of Montenegro and Bulgaria, the latter including Eastern Roumelia. The two last named, with Servia and Roumania, until 1878 formed part of the Turkish Empire. There is also on the sea-coast of France the small independent principality of Monaco. Great Britain, Germany, France, Russia, Austria-Hungary, and Italy are the most important countries of Europe. They are called the "Great Powers." the Netherlands is sometimes called Holland. Europe may be divided into four sections: Northern and Eastern Europe, the British Isles, Western Europe, and Central Europe.

NORTHERN AND EASTERN EUROPE.

Russian Fair at Novgorod.



Opera House.

Northern and Eastern Europe comprise the Kingdom of Sweden and Norway and the Russian Empire.

THE KINGDOM OF SWEDEN AND NORWAY.

See Map, page 537.

Sweden and Norway form the Scandinavian Peninsula, the Scandinavian Mountains constituting a natural boundary between them. The greater part of Sweden is level; but Norway is mountainous, with a rugged coast, broken by islands and deep bays, called fiords. The mountains are covered with valuable timber, which is used for ship-building in nearly every country of Europe. The mines yield coal, iron, copper, and zinc. Commerce, ship-building, and fishing are the leading industries. The exports are lumber, grain, fish, and iron. The chief agricultural products are oats, rye, wheat, and potatoes. Each country has its own constitution, capital, and legislature; but both are ruled by the same king. Stockholm is the capital and largest commercial city of Sweden; Christiania, of Norway.

Other important Cities.—In Sweden, Gothenburg is partly built on piles driven into marshy land. In Norway, Bergen exports fish in large quantities.

Historical Notes.—The early inhabitants of Norway, Sweden, and Denmark were called Northmen, or Norsemen. Their sailors were brave and adventurous. Between the 8th and 11th centuries, they made great discoveries. It is said that they discovered Iceland, Greenland, and the eastern coast of the United States, and, for a while, ruled in England and Ireland. Except in Iceland, their explorations and settlements were neither useful nor permanent. Three successive Danish kings (Canute, Harold, and Hardicanute) ruled England from 1017 to 1042.

Lapland.—The country north of the Arctic Circle, between the White Sea and Atlantic Ocean, is called Lapland. It is divided between Russia and Sweden. The chief wealth of the Laplanders consists in their numerous herds of reindeer. These supply them with food, clothing, and the means of travelling.

THE RUSSIAN EMPIRE. *See Map, page* 537.

Russia is the largest country in Europe. Its area is about two-thirds that of the United States, while its population exceeds that of the whole of North America. Russia, with its possessions in Asia, is called the Russian Empire, which comprises more than one-seventh of the land on the earth's surface. Notwithstanding its large population, it is, on account of its great area, the most thinly-settled country in Europe.

St. Petersburg: Statue of Peter the Great.

Its surface, generally, is low and level. Its highlands are the Caucasus Mountains in the south, the Ural Mountains in the east, and the Valdai Hills in the interior.

Its mines yield all the precious and useful metals. Gold, silver, and lead abound in the Ural Mountains. Many of the mines are worked by convicts, who have been exiled from their homes for crimes and political offences.

Its principal rivers are navigable, when not blocked with ice.

Its climate is very cold in the north, temperate in the middle, and hot in the south. Except the cold, marshy region of the north, and the grassy and salt plains of the south-east, Russia is covered with forests of valuable timber, and farms which yield grain in abundance. Three-fourths of the inhabitants are engaged in agriculture. Large portions of the south are treeless plains, on which grapes and other fruits are raised in abundance. Here snow seldom falls.

Foreign commerce is carried on by way of the Baltic and the Black Sea. Wheat is exported to England in immense quantities; and the trade with China, especially in tea, is very extensive.

Domestic commerce is conducted at annual fairs. The commerce of Russia is greatly hindered by the closing of its northern and western harbours, by ice for several months in the year. The fairs at Nizhnee Novgorod and Kharkov are celebrated. At the former, over 200,000 merchants, from all parts of the world, meet every year for trade. To attend the latter, about 80,000 sledges convey the people, over the snow, in winter.

The Czar rules with absolute power. The people have no voice in legislation. The Russian Empire is next to the British Empire in extent and population. The people are slow-going, and have not advanced in civilisation with the other nations of Europe. They comprise numerous tribes, many of which are hardly civilised. Education is confined to the wealthy.

St. Petersburg, the capital and largest city, is extensively engaged in commerce and manufactures. St. Petersburg was built by, and named after, Peter the Great. Situated upon small islands in the Neva River, it is very low, but healthy. Some of the government buildings are magnificent, notably the emperor's winter palace.

Moscow, formerly the capital of Russia, is the winter residence of the royal family. Moscow is celebrated for the citadel, called the Kremlin, which includes a cathedral, churches, palaces, forts, and barracks.

Historical Notes.—The foundation of the Russian Empire was laid in 862, by the Russ a body of Scandinavians under Rurick, whose descendants ruled for 700 years. Its most distinguished ruler was Peter the Great, who governed the empire more than forty years (until 1725). He learned seamanship by cruising on English and Dutch ships; and, in disguise, spent a long time in Holland (the Netherlands) working as a ship-builder, and learning philosophy, astronomy, and geography. Other important events in Russia were the burning of Moscow by the Russians and the consequent retreat of the French, under Napoleon I. (1812); the Crimean War (1853-5); the abolition of serfdom, or slavery (1861); the sale of Alaska to the United States (1867); the Turkish War (1878); and the Nihilist troubles (1879).

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GREAT BRITAIN AND IRELAND. *See Map, page 530.*

GREAT BRITAIN,

so called to distinguish it from Bretagne, or the "Lesser Britain," is one of the largest islands in the world, and embraces England, Scotland, and Wales. With Ireland it forms the United Kingdom. Great Britain is bounded on the North by the Atlantic, on the East by the North Sea, on the South by the English Channel, and on the West by the Atlantic, the Irish Sea, and St. George's Channel. The most North point is Dunnet Head in Caithness; the most South, Lizard Point in Cornwall; the most East, Lowestoft Ness in Suffolk; and the most West, Ardnamurchan Point in Argyllshire. Its greatest length is about 608 miles, and its greatest breadth—from Land's End to the East coast of Kent—about 320 miles; while its surface contains 88,006 square miles. As the rocks of Great Britain form the typical series of the earth's strata, the geology of our country becomes of great importance as a key to the universal composition of the crust of the globe. The whole of the recognised series occur in Great Britain, one or two only being developed more fully elsewhere. It is of vast moment also, from the great influence it has had on the development of the island. All the physical features of the country are intimately connected with its geological structure. The older Palæozoic rocks produce mountainous régions intersected with deep and narrow valleys. The newer strata seldom rise to a great height. The highlands are rounded undulations of the strata, except where igneous rocks are intruded; and the valleys are broad and shallow. In Scotland there are consequently two extensive mountainous districts, occupied chiefly with rocks of Silurian age, and intervening valleys filled up with Old Red Sandstone and carboniferous measures. The climate of Great Britain derives its peculiar character from the insular situation of the country, taken in connection with the prevailing direction of the winds. It is mild and equable in a remarkable degree, the winters being considerably warmer and the summers cooler than at places within the same parallels of latitude. It appears from data furnished by the English Meteorological Societies that the mean temperature of England is 49·5°, and of Scotland 47·5°. The annual rainfall in those districts where hills do not interfere is, in England, about 25 inches, and in similar parts of Scotland about 28. Very few species of plants or animals are peculiar to Great Britain, its natural history corresponding generally with that of continental Europe. The flora of the greater part of the island resembles that of Germany; but in the South of England it is more closely allied to that of the North-West of France. Civilisation has banished from Great Britain many of the animals, such as wolves and bears, once numerous; while many plants introduced by man, and not indigenous, have become thoroughly naturalised. The present population of the island of Great Britain is the result of successive waves of immigration and conquest. There are scattered around the coast numerous rocks and islands, 787 of which belong to Scotland, the number of those of England not being set down fully; 186 of those belonging to Scotland are inhabited, the remainder being presumably barren and inhospitable. For administrative purposes Great Britain, with its surrounding islands—excepting the Channel Islands and the Isle of Man, which are under peculiar jurisdiction—is divided into 84 counties and shires. On the 1st of May, 1707, during the reign of Queen Anne, the union of England and Scotland was formally accomplished; and in 1801 Ireland became part and parcel of the compact, completing what has been since called the United Kingdom. Great Britain contains many marts and seaports, and is an important centre of trade and commerce. Its manufactures are varied and lucrative, and its population industrious and enterprising. Its chief cities are historic and numerous, London being the capital of England, Dublin the capital of Ireland, and Edinburgh that of Scotland. Arms have been ascribed by heralds to the Saxon and Norman monarchs of England in the tenth and eleventh centuries, but without any clear foundation, as heraldry was unknown till the middle of the twelfth century. However, at a period almost prior to the dawn of hereditary coat-armour the sovereigns of England, in common with various other monarchs of Christendom, adopted the lion as their device. Richard I. on his earliest seal has two lions, which are borne counter-rampant, the royal arms of Great Britain as borne at present by the reigning monarch. Since its first adoption by Richard it has undergone some important alterations in its quarterings, the last modification having taken place in the time of George III., on the union of Ireland and England. The area of England is 50,823 square miles; of Wales, 7,363 square miles; of Scotland, 29,820 square miles; Ireland, 32,531 square miles; Channel Islands, 112 square miles; the Isle of Man, 282 square miles. Abroad the foreign and colonial possessions of Great Britain amount in the aggregate to about 8,000,000 square miles, with a total population in 1891 of close to 235,000,000.

Cookham-on-Thames.

ENGLAND (*See Map, page* 531.)

(from *Angles*, a tribe of Saxons, and Saxon *lond*, country, so named by order of Egbert, in a parliament held at Winchester, 829), the south and larger section of the island of Great Britain. Area, 32,527,070 acres.

Of the inhabitants of England before the Christian era little is known. In some of the ancient geographies there are a few scattered notices of a rude population, with whom a limited commerce in tin was carried on by the Phœnician merchants; and our information scarcely extends further.

When William of Normandy landed in England to claim the crown which Edward the Confessor had bequeathed to him, he found that the people had raised to the throne Harold, the son of a popular nobleman. The resources of the Saxons, however, had been wasted in domestic conflicts before the attack of William; and the battle of Hastings (A.D. 1066) gave England with comparative ease to the Normans The next twenty years saw the conquest completed, and nearly all the large landed estates of the Saxons pass, on every pretext except the true one, into the hands of the Normans. In the course of time the Normans were absorbed among the Saxons, their very language disappearing, though leaving many traces. From this union arose the English people and the English language as they now exist. The union of the Normans with the Saxons was not fully effected so long as the Normans retained their foreign possessions. In King John's reign the whole of these were lost excepting Guienne and Poitou.

In the reign of Stephen occurred the civil war between the Empress Maud, daughter of Henry I., and Stephen; she finally retired to France, and concluded a peace with her adversary. The great struggles of the successors of William were with the ecclesiastics and with the barons. Sometimes in these the popular sympathies were with, and sometimes against, the crown. The Conqueror himself and his immediate successors had no difficulty in maintaining the superiority of the courts of justice over the ecclesiastics; but even a sovereign so bold and skilful as Henry II. was forced, after the outcry occasioned by the murder of Thomas à Becket (A.D. 1170), to yield the point. The right to nominate the higher ecclesiastics was also secured by the popes.

Under the Plantagenets an era of progress generally opened for England. The reign of Henry II. gave to the country the Constitution of Clarendon; Ireland was conquered in 1172; England was divided into six circuits for the better administration of justice, and a digest of the laws was made by Glanville about 1181. Richard I. did little for the internal good of the land, his chief exploits occurring on the field of battle in foreign lands. Under John two important events occurred: Magna Charta was obtained, and the French possessions were nearly all lost—both unmitigated blessings; but otherwise John's influence was cast against progress and reform. The degradation of the English monarchy was at its lowest when he consented (A.D. 1213) to hold the crown as a gift from Rome. From Henry II. something similar to the Great Charter had already been gained; but it was the Magna Charta of John which firmly established two great English principles—that no man should suffer arbitrary imprisonment, and that no tax should be imposed without the consent of the council of the nation. During the reign of Henry III. England obtained her first regular parliament, and gold money was first coined in 1257. Edward I. was crowned in 1272, and almost the first event of his reign was the conquest of Wales; Scotland also was subdued, but revolted again in 1297. The reign of Edward II. was disastrous to himself and to England. The barons rose against his favourites, and Edward was murdered by the connivance of his wife. A new and vigorous era began with the reign of Edward III. The Scots were defeated at Halidown Hill; important victories were gained in France; the Order of the Garter was instituted, and, most important of all, law pleadings were ordered to be in English, instead of in the Norman French tongue, which had hitherto prevailed. Richard II. was crowned in 1377, and with his death in 1385 ended the line of the Plantagenets.

The House of Lancaster succeeded in the person of Henry IV. His reign was disturbed by an insurrection of the Welsh under the Percys, but was otherwise peaceful. Henry V. invaded France and gained the famous battle of Agincourt, and gained the French crown in 1420; but during the reign of his successor, Henry VI., all the French possessions were lost save Calais. He was deposed by Warwick the King-maker, and the first representative of the House of York, Edward IV., was placed on the throne. The Wars of the Roses ensued, which continued through the two succeedings reigns of Edward V. and Richard III., ending with the death of Richard on Bosworth Field, the coronation of Henry VII. in 1485, and his marriage with Elizabeth, daughter of Edward IV. The union of the Houses of York and Lancaster under Henry VII. begins a new period in English history.

Henry VIII. succeeded under the most favourable auspices. He found the alliance of his now important country courted by both of his contemporaries, Francis I. and Charles V. But the interest of the foreign complications of the reign merges in the courts of England and of Rome. Henry was succeeded by Edward VI. His reign was marked by the general progress which the Reformation made from questions of government to questions of doctrine. The next reign saw the inevitable reaction. The superstitions of the people had been too rudely handled, and, as often happens before a crisis, there came a period of physical suffering. The conversion of cornfields into sheep-walks, induced by the high value of wool as an article of export, had thrown many out of employment; and the country was, moreover, infested with the crowd of vagrants whom the monasteries had been wont to maintain. The popular dissatisfaction coupled these things with the Reformation. Thus the opportunity was prepared for the atrocities of the reign of Mary.

The accession of the Protestant princess Elizabeth came as a relief to the whole nation. The Romanists themselves were weary of the policy which made England the tool of Spain, and were sickened with the cruelties which had been enacted. Fortunately for the country the ministry of Elizabeth, guided by the able hand of Cecil, was one of peace. The greatest event in her reign was the defeat of the Spanish Armada. On the death of Elizabeth the crowns of England and Scotland were united. The reign of James I. does not present much that is remarkable. The plot for which Sir Walter Raleigh suffered long afterwards and the Gunpowder Plot created a short-lived excitement. The misfortunes of Charles I. were the legitimate result of the principles of his father. Charles committed the mistake of repeating in the seventeenth century acts which the Plantagenet sovereigns had done with impunity in the fourteenth and fifteenth. In 1637, when the king found himself involved in a war with Scotland in consequence of his endeavour to introduce a liturgy there, he was compelled to call a parliament. The Commons refused supplies, and were again dissolved. In 1640, the king once more summoned a parliament. He found the temper of the houses more indomitable than ever. Instead of voting him supplies they impeached his minister, Strafford, and condemned him to death. The Commons then presented a grand remonstrance to the king, embodying all the grievances the nation had suffered since the death of Elizabeth. Matters proceeded from bad to worse till an open rupture came, and an appeal was made to arms. The fortune of war continued to vary till, at Marston Moor, it turned against Charles, and at Naseby, in June 1645, he was finally defeated. He was tried, and executed on January 30th, 1649. The government for the next four years was conducted by parliament. Meanwhile Cromwell was rising into distinction, and power gradually fell from the hands of parliament into those of the military. In 1653 Cromwell had himself proclaimed "Protector." He was now absolute monarch. He governed with a firm hand; and never was England more respected abroad than during his time. After the death of the Protector in 1658, and a short interval during which his son Richard held the office, parliament received with acclamations a proposal from Charles II. to return. In May 1660 the populace clamoured with delight on the occasion of the royal entry into London of him who, a few years before, had fled from Worcester for his life. While Clarendon was minister the government of Charles II. was well conducted. In 1681 the parliament was dissolved, and Charles never called another. After this there was a change for the worse in the character of the government: from being wantonly indifferent it became sullenly mischievous. When the king died, in 1685, James II. succeeded, amid universal dissatisfaction, and the government speedily went from bad to worse. Never was the British name and influence at so low an ebb as now; discontent was everywhere in England, and rebellion was ready to crop out at any moment. William, Prince of Orange, who had married Mary, eldest daughter of the king, had long been in correspondence with the malcontents. He now landed in England with a small body of troops. The soldiers, leading nobles, even the king's own children, joining the prince, the king fled to France. Parliament then settled the crown jointly on William and Mary for life. James, with the assistance of Louis XIV., made one effort to regain his throne. He landed in Ireland, where the lord-lieutenant, Tyrconnel, was devoted to his cause, and managed to raise an army. William defeated him at the battle of the Boyne, and the contest was soon after this terminated by the second flight of James to France. So easily was the great revolution of 1688 effected. The domestic government of William was marked by his efforts to introduce a general toleration; but of his foreign administration, which led the country into costly wars with France, it is hardly possible to speak in very favourable terms. Under Queen Anne, second daughter of James II., the war with France was renewed, and the splendid victories of Oudenarde, Blenheim, and Ramilies were achieved. With these the existence of England as a separate state closes. In 1707 the long-wished-for union with Scotland was accomplished; and after that Great Britain, united under one legislature, as well as under one crown, has a common interest among nations, and therefore a common history. The Brunswick Line acceded in the person of George I. in 1714. His, and the reign of his successor, George II., were marked by insurrections and rebellions of the adherents of the exiled Stuarts, who were defeated totally at Culloden in 1746. George III. acceded in 1760; the great event of his time was the successful revolt of the American colonies. During this reign the deaths of both the "Old" and the "Young" "Pretenders" occurred, and henceforward the Stuart line lived only in the memory of the historian. Other notable events were the passage of the Act of Union between Great Britain and Ireland in 1801, and the abolition of the slave trade. Owing to the king's insanity the Prince of Wales was appointed regent in 1811; he was crowned George IV. in 1820, on the death of his father. William IV. ascended the throne in 1830, and his reign was marked by the total cessation of slavery in the British colonies. He was succeeded by his niece, the reigning Queen, Victoria, June 20th, 1837, who married Prince Albert of Saxe-Coburg in 1840. The present Prince of Wales is more popular with the people than any previous heir-apparent.

Parliamentary Reform.—In the second parliamentary session of 1884, an Act was passing extending the borough franchise for England and Scotland to counties, introducing a "service franchise," and placing the three kingdoms on a footing of equality as regards electoral qualifications. This measure came into operation on January 1st, 1886. The following are the essential provisions of the new Act: "A uniform household franchise and a uniform lodger franchise at elections shall be established in all counties and boroughs throughout the United Kingdom, and every man possessed of a household qualification or a lodger qualification shall, if the qualifying premises be situate in a county in England or Scotland, be entitled to be registered as a voter, and when registered to vote at an election for such county, and if the qualifying premises be situate in a county or borough in Ireland, be entitled to be registered as a voter, and when registered to vote at an election for such county or borough. Where a man himself inhabits any dwelling-house by virtue of any office, service, or employment, and the dwelling-house is not inhabited by any person under whom such man serves in such office, service, or employment, he shall be deemed for the purposes of this Act and of the Representation of the People Acts to be an inhabitant occupier of such dwelling-house as a tenant. Every man occupying any land or tenement in a county or borough in the United Kingdom of a clear yearly value of not less than ten pounds, shall be entitled to be registered as a voter, and when registered to vote at an election for such county or borough in respect of such occupation subject to the like conditions respectively as a man is, at the passing of this Act, entitled to be registered as a voter and to vote at an election for such county in respect of the county occupation franchise, and at an election for such borough in respect of the borough occupation franchise." It is stated in a parliamentary paper, issued in the session of 1884, that if the 652 members (inclusive of disfranchised boroughs) were distributed according to population, the numbers would be 486 for England and Wales, 71 for Scotland, and 93 for Ireland. If regulated by contributions to revenue in 1883, the numbers would be 525 for England and Wales, 73 for Scotland, and 60 for Ireland; and if regulated by the mean of the two numbers, 509 for England and Wales, 72 for Scotland, and 73 for Ireland. In the second session of 1884 there was introduced into parliament a Redistribution of Seats Bill; the points of which are the abolition of what is known as "three-cornered constituencies," the introduction of single seats, addition of twelve members to the House of Commons, Scotland getting these, England getting six seats (including two from Ireland) rendered vacant by disfranchisement, and Ireland standing at 103 in place of her original 105. Under an Act passed in the session of 1872, and which was to continue in force till December 31st, 1880, but which has since continued from year to year, all elections for members of parliament must be by secret vote and ballot. The sole qualification required to be a member of parliament is to have attained the age of twenty-one. But all priests and deacons of the Church of England, ministers of the Church of Scotland, and Roman Catholic clergymen; all government contractors, and all sheriffs and returning officers for the localities for which they act, are disqualified both from voting and from sitting as members. No English or Scottish peer can be elected to the House of Commons, but Irish peers are eligible.

WALES,

is a principality of Great Britain, formerly inhabited by the Cymries, whom the Romans and Anglo-Saxons endeavoured to conquer, but without success. Owing to internal broils, the Cymries were unable to maintain their complete independence after the Danish conquest. They were subdued by William the Conqueror, united to England by Edward I., and finally, in 1536, merged completely into the latter country by Henry VII.

Merthyr Tydfil, the largest town in Wales, is noted for its iron-works. Swansea is the principal seat of the copper trade, and is much resorted to for sea-bathing.

The tin mines of Cornwall have been famous from remote antiquity. Rich mines of coal, copper, iron, and slate are found in Wales.

A considerable part of the tin used by mankind is produced in Wales. This country is also extremely rich in iron, lead, and other useful minerals.

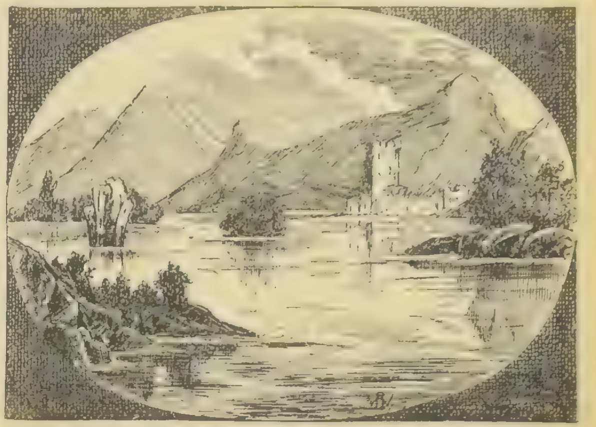
SCOTLAND. *See Map, page* 532.

FORTH BRIDGE.

The original Scotia or Scotland was Ireland, and the Scoti or Scots, at their first appearance in authentic history, were the people of Ireland. The Scots were a Celtic race, and their original seat in North Britain was in Argyle, from whence they spread themselves along the west coast from the Firth of Clyde to the modern Ross. The name of Scotland seems to have been given to the united kingdom of the Picts and Scots in the tenth century. It was then sometimes styled, by way of distinction, *Scotia Nova* (New Scotland), and it was a considerable time afterwards before the name of Scotland was applied to it, to the exclusion of Ireland. This interchange of names was a fruitful source of dispute between Irish and Scottish writers in the sixteenth and following century, and it can hardly be said that even now the controversy is entirely at an end. The first prince of the British Scots was Fergus, son of Erc, who crossed over to Britain about the year 503. His great-grandson, Conal, was king of the British Scots when Columba began the conversion of the Northern Picts. Colan's nephew, Aidan, was a powerful prince, and more than once successfully invaded the English border. The history of Aidan's successors is obscure and uninteresting. In the middle of the ninth century, by a revolution, the Scots acquired a predominance in North Britain. Kenneth, lineal descendant of Aidan, laid claim to the British kingdom. The last addition to Scotland in the south took place under Malcolm II., son of Kenneth, who acquired the Merse and Teviotdale from the Earl of Northumbria, and thus advanced his kingdom on the east border to the Tweed. The long reign of Malcolm III. was the commencement of a great social and political revolution in Scotland. His residence in England, and marriage with the English Princess Margaret, led to the introduction of English customs, the English language, and an English population into the south and east districts of the kingdom. English influence continued to increase during the reigns of Edgar, Alexander I., and David. David was a great reformer in Church and State. David's grandson, Malcolm IV., reigned for twelve years, and William the Lion, Malcolm's brother, ruled from 1165—1214. Alexander III. was one of the ablest and best of Scottish kings. By a treaty with the King of Norway he added to his kingdom Man and the other islands of the West Sea. On the death of the infant granddaughter of Alexander III., in 1290, the succession to the crown was disputed. The decision between the two chief claimants, Baliol and Bruce, was referred to Edward I. of England. This great king was bent on uniting the British Islands under one sceptre; and in the pursuit of that object he sacrificed humanity, honour, and justice. The national spirit of the Scots was finally roused, and there ensued a long struggle for independence. The reign of David II., and those of his successors Robert II. and Robert III., the first two princes of the House of Stuart, were the most wretched periods of Scottish history. The vigorous rule of James I. restored tranquillity, but he was assassinated. James II., James III., James IV., James V., Mary, and James VI., all succeeded while under age. The last addition to the Scottish kingdom was made in the reign of James III., when the islands of Orkney and Zetland were made over to him as the dowry of his queen, Margaret of Norway. During the reign of James V. religious discord added another element to the evils with which Scotland was afflicted. James VI. struggled hard to establish an absolute supremacy, both in Church and State. After his accession to the English crown, he was apparently successful in carrying out his designs, but the opponents of the crown bound themselves together by the Solemn League and Covenant, and their efforts were completely successful, but their success led to the utter overthrow of the monarchy by Cromwell. The government of Charles II. and James VII. was oppressive and corrupt. The result was the Revolution, which seated William and Mary on the throne. The discontent of the Scotch was greatly increased by the fears entertained of English influence. The state of matters grew so threatening after the accession of Queen Anne, that the ruling English statesmen became satisfied that nothing but a union between the two kingdoms could avert the danger of a disputed succession to the throne, and of a civil war. They were successful in carrying through their design, though it was opposed by a majority of the Scottish people. The Act of Union was formally ratified by the Parliament of Scotland in 1707. Scotland has greatly increased in prosperity during the last century.

IRELAND. *See Map, page* 532.

An island forming part of the United Kingdom of Great Britain and Ireland. It is washed on the north, west, and south, by the Atlantic, and on the east by a strait, called at different places the North Channel, the Irish Sea, and St. George's Channel, which separates it from the larger island of Great Britain. Its greatest length, from Fair Head, in Antrim, to Crow Head, in Kerry, is 306 miles, but its greatest meridianal length is not more than 225 miles; its greatest breadth, between the extreme points of Mayo and Down, is 182 miles, but between Galway Bay and Dublin it is not more than 120. The total area is about 32,531 square miles, while the lakes and waters of the country cover 627,464 acres. Population 5,174,836. Ireland is divided into the four provinces of Ulster, Leinster, Munster, and Connaught, which again are subdivided into 32 counties. Ireland is of oblong form; the east coast is comparatively unbroken, while the west, north, and south are deeply indented. It is an undulating or hilly country. Its hills are more rounded than abrupt, and lie not so much in ranges as in detached clusters round the coasts. These mountain tracts rarely extend more than 20 miles inland, and they seem to form a broad fringe round the island; while the interior appears as a basin composed of flat or gently swelling land. The principal ranges are the Mourne Mountains, in Down, which attain their highest elevation in Slieve Donard, 2,796 feet above the sea; the mountains of Wicklow, which rise to a height of 3,039 feet; and Macgillicuddy Reeks in Kerry, which, in the Peak of Carran-Tual, the loftiest point in Ireland, reach 3,414 feet. The purely flat or level portions of the island, with the exception of some fine tracts of fertile valley-land in Kilkenny, Tipperary, and Limerick, consist mainly of bog or morass, which occupies, according to Dr. Kane, 2,830,000 acres, or about a seventh part of the entire superficies. The largest of these morasses is the Bog of Allen, which stretches in a vast plain across the centre of the island, or over a large portion of Kildare, Carlow, King's and Queen's counties—having a summit elevation of 280 feet. Extensive tracts of deep wet bog also occur in Longford, Roscommon, and other counties, and give a peculiarly dreary and desolate aspect to the scenery. Notwithstanding the quantity of water in these bogs, they exhale no miasma injurious to health, owing to the large quantity of tannin which they contain.


RUINS OF ROSS CASTLE, LOUGH LEANE, LAKES OF KILLARNEY, IRELAND.

Soil and Vegetation.—Until the middle of last century Ireland was almost exclusively a pasturing country, and in 1727 an attempt was made to pass an act compelling landholders to "till 5 acres out of every 100 in their possession, and to release tenants to the same extent from the penal covenants in their leases against tillage." The result of this state of things is the wretchedly poor system of agriculture from which Ireland still suffers largely. The natural fertility of the country is nevertheless very great.

Fisheries.—In her fisheries Ireland is supposed to possess an almost inexhaustible mine of wealth, but, strange to say, they are much neglected. The surrounding seas abound with cod, ling, hake, herrings, pilchards, etc., and yet the Irish markets are extensively supplied with cured fish from Scotland and the Isle of Man. The number of vessels and boats engaged in the sea-fisheries in 1846 was 20,000, employing 100,000 men and boys; but in 1876 it had decreased to 5,965, employing only 23,693 persons. This seems to have been owing to emigration and the great demand for seamen. The inspectors of fisheries have recommended the advance of a loan for the repair and purchase of boats and gear.

Manufactures.—Ireland is not, and never has been, a manufacturing country. Its unsettled, turbulent state, and the general dependence of the population on land, have hitherto formed insuperable obstacles to the formation of great manufacturing establishments in most parts of the country; whilst adverse legislation, the want of coal, capital, and skilful workmen, and the great ascendency of England and Scotland in all departments of manufacture, will, there is reason to think, hinder Ireland from speedily attaining eminence in this department. Linen is the staple manufacture, of which Belfast and the surrounding districts of Ulster are the chief seats. A great source of employment for females has of late years sprung up in the North of Ireland in the working of patterns on muslin with the needle. Belfast is the centre of this manufacture, which employs about 300,000 persons, chiefly females, scattered through all the counties of Ulster and some localities of the other provinces.

Commerce and Shipping.—The exportation of the agricultural produce of the country has always been the chief commercial business carried on in Ireland. By far the greater part of this trade is carried on with Great Britain. It cannot, however, be traced earlier than 1825, when the commercial intercourse between Great Britain and Ireland was assimilated by law to the coasting-traffic carried on between the different ports of England except in the single article of grain.

Government.—The government of Ireland, since the Union in 1801, is identical with that of Great Britain.

Religion.—A vast majority of the inhabitants of Ireland are Roman Catholics; but the Episcopal Church, a branch of the Church of England, was the Established Church till January 1871. It now exists independently as the Church of Ireland. In 1871 the number of Roman Catholics was 4,150,877; of Protestants 1,260,568, and of Jews 258.

Education.—Ireland possesses several universities: Dublin University, said to have been founded in 1320; the Queen's Colleges of Belfast, Cork, and Galway, opened in 1849, are united in one university. The Roman Catholic University was founded in 1854; and Maynooth College in 1795 for the education of Roman Catholic priests. There are also several Irish colleges and medical schools in connection with the London University. The primary schools of Ireland are mostly under the management of the Commissioners of National Education.

History.—According to ancient native legends, Ireland was in remote times peopled by tribes styled Firbolgs and Danauns, eventually subdued by Milesians or Gaels, who acquired supremacy in the island. The primitive inhabitants of Ireland are now believed to have been of the same Indo-European race with the original population of Britain. Although Ireland, styled *Iernis,* is mentioned in a Greek poem five centuries B.C., and by the names of *Hibernia* and *Juverna* in various foreign pagan writers, little is known with certainty of her inhabitants before the fourth century after Christ, when, under the appellation of *Scoti*, or inhabitants of *Scotia*, they became formidable by their descents upon the Roman province of Britain. These expeditions were continued and extended to the coasts of Gaul till the time of Laogaire M'Neill, monarch of Ireland, A.D. 430, in whose reign St. Patrick attempted the conversion of the natives. From the earliest period, each province of Ireland appears to have had its own king, subject to the *Ard-Righ* or monarch, to whom the central district called Meath was allotted, and who usually resided at Tara. Each clan was governed by a chief selected from its most important family, and who was required to be of mature age, capable of taking the field efficiently when occasion required. The laws were peculiar in their nature, dispensed by professional jurists styled *Brehons*, who, as well as the poets and men of learning, received high consideration, and were endowed with lands and important privileges. Cromlechs, or stone tombs and structures, composed of large uncemented stones, ascribed to the pagan Irish, still exist in various parts of Ireland. Lacustrine habitations, or stockaded islands, styled *Crannogs* or *Crannoges*, in inland lakes, also appear to have been in use there from early ages. It is remarkable that a greater number and variety of antique golden articles of remote ages have been found in Ireland than in any other part of North Europe; and the majority of the gold antiquities illustrative of British history, now preserved in the British Museum, are Irish. In the sixth century extensive monasteries were founded in Ireland, in which religion and learning were zealously cultivated. From these establishments, numerous missionaries issued during the succeeding century, carrying the doctrines of Christianity under great difficulties into the still pagan countries of Europe, whose inhabitants they surprised and impressed by their self-devotion and asceticism. Among the eminent native Irish of these times were Columba, or Colum Cille, founder of the celebrated monastery of Iona; Comgall, who established the convent of Bangor, in the county of Down; Ciaran of Clonmacnoise; and Adamnan, abbot of Iona, and biographer of Columba. Of the Irish missionaries to the continent, the more distinguished were Columbanus, founder of Bobio; Gallus of St. Gall, in Switzerland; Dichuill, patronised by Clotaire; and Ferghal, or Virgilius, the evangeliser of Carinthia. The progress of Irish civilisation was checked by the incursions of the Scandinavians, commencing toward the close of the eighth century, and continued for upwards of three hundred years. From the close of the eighth to the twelfth century, Ireland, although harassed by the Scandinavians, produced many writers of merit, among whom were Ængus, the hagiographer; Cormac M'Cullenan, King of Munster and Bishop of Cashel, the reputed author of *Cormac's Glossary;* Cuan O' Lochain; Gilla Moduda; Flan of Monasterboice; and Tighernach, the annalist. Of the Irish architecture of the period, examples survive at Cashel. The well-known round towers of Ireland are believed to have been erected about this era as belfries, and to serve as places of security for ecclesiastics during disturbances. But this is mere surmise, the date of their erection having never been established, nor their use satisfactorily explained. The skill of the Irish musicians in the twelfth century is attested by the enthusiastic encomiums bestowed by Giraldus Cambrensis upon their performances. The first step toward an Anglo-Norman descent upon Ireland was made by Henry II., in 1155. The chief Anglo-Norman adventurers, Fitz Gislebert, Le Gros, De Cogan, De Lacy, and De Curci, encountered formidable opposition before they succeeded in establishing themselves on the lands which they thus invaded. The government was committed to a viceroy, and the Norman legal system was introduced into such parts of the island as were reduced to obedience to England. The youthful prince John was sent by King Henry into Ireland in 1184; but the injudicious conduct of his council having excited disturbances, he was soon recalled to England. The country was wholly subdued in 1210; in 1318 Ireland was invaded by Edward Bruce, who was crowned king 1316, and slain 1318. In 1361 the heiress of Ulster, Elizabeth de Burgh, married the English Duke of Clarence. In 1394 Richard II. landed at Waterford with a large army, and gained the adherence of the people by his munificence. In 1494 was passed Poyning's Law, making the Irish parliament subject to the English council. In 1542 Henry VIII. assumed the title of *king*, instead of *lord* of Ireland. In 1534 Thomas Fitzgerald, son of the viceroy of Henry VIII., revolted, but not meeting with adequate support from his Anglo-Irish connections, he was, after a short time, suppressed and executed. Henry received the title of "King of Ireland" in 1541, by an act passed by the Anglo-Irish parliament in Dublin; and about the same period some of the native princes were induced to acknowledge him as their sovereign, and to accept peerages. The doctrines of the Reformation met little favour either with the descendants of the old English settlers or with the native Irish. The attempts of the English government in Ireland to introduce the Reformed faith and English institutions stirred up great dissensions in Ireland. The country was divided into shires in 1569; printing in Irish characters introduced by Walsh, Chancellor of St. Patrick's, Dublin, 1571; in 1601-2 occurred the famous insurrection of Tyrone, who invited the Spaniards to assist him, but they were all defeated by the Lord Deputy Mountjoy in the latter year. In consequence of repeated rebellions, 511,465 acres of land in the province of Ulster became forfeited to the English crown, and James I. divided this land among such of his English and Scottish subjects as chose to settle there. In 1641 occurred More and Maguire's rebellion, which was an endeavour to expel the Protestant settlers in Ulster, many of whom are believed to have been massacred. Between the years 1649-56 Cromwell and his son-in-law, General Ireton, reduced the whole island to subjection, and Ireland was comparatively tranquil until the Revolution. At the Revolution, the native Irish generally took the part of James II., the English and Scotch "colonists" of William and Mary; and the war was kept up for four years (1688-92). From this time till 1778, history records little beyond the passing of penal statutes against the Roman Catholics. In 1778 parliament relaxed the stringent pressure of these acts; but the widely-spread disaffection which they caused gave birth to numerous societies, resulting in the rebellion of 1798, which was not suppressed till 1800. On January 1st, 1801, the legislative union of Great Britain with Ireland was consummated, and from this period the history of the country merges in that of Great Britain. In a MS. in the Heralds' College of the time of Henry VII., the arms of Ireland are blazoned azure, a harp Or, stringed argent; and when they were for the first time placed on the royal shield on the accession of James I., they were thus delineated. Another crest is a harp Or. The national flag of Ireland exhibits the harp in a field vert. The royal badge of Ireland, as settled by sign-manual in 1801, is a harp Or, stringed argent, and a trefoil vert, both ensigned with the imperial crown. In 1879 Ireland suffered severely from famine, and, since 1880, from agrarian disturbances.

BRITISH COLONIES AND DEPENDENCIES.

THE development of Britain's Colonial Empire has undoubtedly been one of the most noteworthy features of modern times. It is without parallel in the records of the world's history, and the extent to which our island home has been the mother of new nations is sufficient to justify our pride in our world-wide empire. This splendid heritage has been won by the manifestation of the same characteristics as have made our countrymen famous in every field in which enterprise, courage, industry, hardihood, and perseverance tell. The British people have been successful as colonisers, settlers, and builders up of nations, not because chance has favoured them, but because the qualities we have referred to have enabled them to succeed where others, who were in some cases on the ground earlier, and under conditions at least as favourable as those which attended our efforts, failed. The Portuguese and Spaniards, and even the French, were in the field as settlers and enterprising adventurers long before Englishmen were. Spain had a settlement in Dominica as early as 1493, and Vasco de Gama reached India in 1498. Within very few years, India and South America had their Portuguese and Spanish viceroys. In 1534, Jacques Cartier made his famous voyage up the St. Lawrence, taking possession of the country in the name of the French Sovereign. True, Cabot discovered Newfoundland and the mainland of North America in 1497, but he, like other early Western navigators, simply regarded the New World as a barrier on the way to India. It was this latter land of fabulous riches that was the goal of the naval enterprise of England for many years after Cabot's discovery.

Up to the end of the sixteenth century, while Portugal and Spain were rapidly extending their sway in Asia and America, England had only a doubtful possession of Newfoundland, along with powerful French rivals. Even Sir Humphrey Gilbert's attempt to effect a settlement on the island in 1583 can hardly be regarded as other than abortive, though it gives Newfoundland a claim to be regarded as the earliest British colony. The first effective English settlement on the island cannot be dated earlier than 1623, long before which Virginia had been planted and James Town founded. True, in 1580 the British flag was planted in the West India island of Tobago, but that island was not effectively occupied by England till 1763. Meantime, some roving Englishmen had in 1605 planted a cross in Barbados inscribed "James, King of England and of this island," though there was no actual settlement till 1625. Barbados is one of the two or three British West India islands that never changed hands. After all, however, Bermuda may fairly claim to be considered the earliest of existing English colonies, as it was colonised both from Virginia and England shortly after 1609. But later, during the seventeenth century, the growth of our colonial possessions was slow, if we except the New England States and the settlements on the east American coast to the south. Leaving these last out of view, as they no longer belong to us, our colonies at the close of the century were few and scattered compared with the enormous territories which Portugal and Spain, France and Holland, were endeavouring to drain of their wealth.

Even in India, during the seventeenth century, the

East India Company were simply leaseholders of the native princes. Newfoundland, as we have already indicated, was only permanently settled in 1623, fourteen years after the planting of Bermuda. In the same year, an English colony was planted in Nova Scotia, which then included New Brunswick, though it was only at the Peace of Utrecht (1713) that we can be said to have obtained undisputed possession. With one or two exceptions, our footing in the West India Islands during the seventeenth and even the eighteenth centuries was exceedingly unstable; they were being continually bandied about between England, France, and Spain before the final adjustment at the beginning of the present century. As we have stated above, an effective settlement was made in Barbados in 1625. Two years previously, some Englishmen established themselves in St. Christopher, which, however, was not finally ceded to Great Britain till 1713. Between 1628 and 1650, Nevis and Turk's Island, Antigua, Montserrat, St. Lucia, and Anguilla received English settlers, though St. Lucia, at least, changed hands several times before finally becoming English in 1803. Crossing over to Africa, we find that as early as 1588 Queen Elizabeth granted a patent to a company to trade to the Gambia, but no settlement seems to have been established till 1631, and even that can hardly have come to much, since a re-settlement was made in 1817. Still, there was a very considerable trade between England and West Africa in the seventeenth century, and Gambia and other stations became notorious as centres of the slave trade. But their value for colonising and trading purposes soon sank far below that of the West Indies and other annexations. St. Helena became ours by capture in 1651, and four years later (1655) Jamaica, the largest and richest of our West India possessions, capitulated to an expedition sent out by Cromwell. English factories seem to have been established on the Gold Coast in 1661, and our first settlement on the Virgin Islands dates from 1668. A small English colony was planted in New Providence in the Bahamas in 1629, though we had frequently to give up possession before the islands finally became ours in 1783. Meantime, England was rapidly extending her sway over the eastern coast of what is now the United States, and these possessions, even in the seventeenth century, were of far greater importance than all her other acquisitions.

At the end of the seventeenth century, then, besides Newfoundland and Bermudas, and a few factories on the West African coast and in India, of the present colonial empire we had possession, more or less stable, of Jamaica, Barbados, St. Christopher, Nevis, Turk's Island, Antigua, Montserrat, Anguilla, Virgin Islands, Bahamas, and St. Helena out in the Atlantic. The total area of these did not much exceed 60,000 square miles, for our African and Indian settlements were little more than stations. Even if we added such parts of Nova Scotia and New Brunswick as were not occupied by France, the total area could scarcely be more than 80,000 square miles.

During the first half of the eighteenth century, if we except the confirmation to Great Britain of the ten North American colonies just mentioned, and one or two of the West India islands already included, the only acquisition of importance as a foreign possession was Gibraltar (1704), and that not as a colony, but as a strategical station. A period of comparative quiescence prevailed during these fifty years previous to the outbreak of the great and long-continued struggle between England and France for supremacy on the seas, if not on land. Comparatively few additions were made to the English possessions on the North American coast. France claimed all Canada, only tolerating the station of the Hudson's Bay Company, founded in 1670, and holding the Alleghanies as the western limit of English dominion. The position in the West Indies remained essentially unaltered, though the development of the English plantations in that region was proceeding with profitable activity. The few factories on the West African coast were of little account, the Dutch were still supreme at the Cape, and Cook was only beginning his career in the Royal Navy. The factories and business of the East India Company were steadily extending in India.

During the last forty years of the eighteenth century on the other hand, the broad foundations of England's Empire beyond the seas were firmly laid; subsequent operations have mainly been in the way of development and consolidation. The struggle between England and France for supremacy beyond Europe began almost simultaneously in India and Canada. On the latter field it resulted in the capitulation of Quebec in 1759, followed four years later by the cession of the whole of Canada; so that England was virtually mistress of the whole of North America. And mistress she might, perhaps, have remained, had it not been for the serious blunder in colonial policy, which resulted in the Declaration of Independence being signed in 1776, and in England having to resign herself to the loss of by far the most valuable half of her dominions in America in 1783. Now our trade with the United States is equal to the total of our colonial trade, leaving India out of account, and amounts to one-third of our entire foreign commerce. Whether if the separation had not come then it would have been possible to retain the connection until now, and whether our trade with our American cousins would have been as great as it is, are matters as to which some doubt may be entertained. What might have been the outcome of an effort to solve the slavery problem, with what are now the United States a portion of the empire, who can tell? The abolition of the slave trade in British dominions was rendered comparatively easy by the loss of the American States. Had they been retained it certainly would not have been accomplished so soon; and who, in view of the conflict that was witnessed in the States, can say that before the struggle for the freedom of the negro had ended, the whole empire might not have been rent to pieces by strife? In the same year that Canada became that English possession, the islands of Dominica, Granada, St. Vincent, and Tobago were added to our West Indian possessions followed in 1797 by the surrender of Trinidad to Abercromby by the Spaniards. Although Commodore Byron took possession of the Falkland Islands in 1765, no effective establishment was formed there till 1833. In In 1783-6 British Honduras was acquired by treaties; in 1787 Sierra Leone was ceded by the native chiefs; while in 1788, a little more than a century ago, the foundation of the great Australasian group of colonies was laid.

Turning to the east, we find Malacca captured from the Dutch in 1795, though it did not finally become English till 1823. Penang was colonised in 1785, and Province Wellesley in 1798. Much more important was the capture of Ceylon from the same Power in 1796. The battle of Plassey was fought in 1757, and within about half-a-century after, English supremacy was virtually established, directly or indirectly, over a great part of the Indian Peninsula. Bengal was ceded in 1765, and Madras conquered in 1792—1800, having between them an area estimated at 290,000 square miles, and a population of 55,000,000.

Thus during the latter half of the eighteenth century we had succeeded in rapidly increasing our foreign possessions by something like 6,500,000 square miles, reckoning the whole of Australia as virtually annexed. During the present century we have been able to increase this area by about one-third, half of it, at least, in India. While, during the last eighty-six years, we have been extending and confirming our hold over India, and while we have acquired one or two really important additions to our possessions, our chief work has been to develop and consolidate the acquisitions of the latter half of the eighteenth century. In the West India region British Guiana was finally annexed in 1803, and St. Lucia in the same year, thus completing the present list of our possessions in that quarter. Also in 1803 the first settlement was established in Tasmania. Twenty-six years later (1829) West Australia was settled, followed seven years after (1836) by the modest beginnings of South Australia at Port Philip. In 1841 New Zealand began her career as a British colony; ten years later (1851) Victoria separated from New South Wales and set up for herself, an example followed by Queensland in 1859. In 1806 the Dutch were compelled to hand over to us their possessions in South Africa which, by the formation of the Natal colony in 1838, and other subsequent annexations, have been extended far beyond their original boundaries. In 1807 we captured the tiny islet of Heligoland, recently ceded to Germany, and three years later (1810) Mauritius capitulated, our possession of the island being confirmed by the Treaty of Paris, 1814. A year later (1815) we acquired the Ionian Islands by treaty, only to give them up to Greece some fifty years after, and in the same year we established our naval station in Ascension. Singapore was settled in 1818, and the Falklands in 1833; Aden, as an outpost of India, was occupied in 1833, Labuan was ceded in 1846, followed by Lagos in 1861, and Fiji in 1874. The Straits Settlements were detached from India in 1867, and set up for themselves as a separate colony; and in 1874 the native States of Perak, Selangore, and Sungei Ujong were placed under its protection. Cyprus was occupied in 1878. The British North Borneo Company was incorporated by Royal Charter in 1881. The British flag was raised over Southern New Guinea, the Niger Mouth, and Bechuanaland in 1884. In 1886 the extensive territory of Upper Burmah was annexed, with its area of 190,000 square miles, and 4,000,000 of people. Prior to which our great Indian Dependency had grown so rapidly that the 290,000 square miles, and 55,000,000 of people of 1800 had extended to nearly 1,400,000 square miles and 250,000,000 inhabitants. In this cursory survey a number of outlying islands, which must not be overlooked, have not been specially mentioned.

WESTERN EUROPE.

WESTERN EUROPE comprises Denmark, Belgium, The Netherlands, France, Spain, and Portugal.

Surface.—With the exception of the Spanish Peninsula, these countries are mostly included in Lowland Europe, and have, therefore, a level surface.

Climate.—The climate is much more mild and moist than that of the Atlantic coast of America in the same latitudes. The winter is warmer, and the heat of summer less intense. This is owing chiefly to the influence of the Gulf Stream, a warm ocean-current, which, crossing the Atlantic from the vicinity of the Gulf of Mexico, bathes the western shores of Europe, cooling the air in summer and warming it in winter. Thus, Copenhagen has a warmer winter than Washington, U.S.A., though the latter place is about 1,100 miles farther south; yet the summer of Denmark is much cooler than that of Canada. In the Spanish Peninsula, the summers are dry and hot, but the winters on the table lands are cold.

Coast.—The coast-line is much indented, thus furnishing excellent advantages for commerce. The greater part of this section belongs to the Atlantic declivity, and is drained by several large rivers, the principal of which are the Rhine, the Scheldt, the Seine, the Loire, the Garonne, the Douro, the Tagus, the Guadiana, and the Guadalquivir. The Rhone, "one of the most beautiful of rivers," drains the south-eastern part of France and flows into the Mediterranean Sea. The rivers of France, Belgium, and The Netherlands are navigable the greater part of their course. They are connected with one another by numerous canals. The Languedoc Canal, 150 miles long, joins the Garonne to the Mediterranean Sea, furnishing an inland passage from the Atlantic to the Mediterranean.

Productions.—Agriculture is the chief occupation of much the larger portion of the inhabitants of these countries. The manufactures, those of France and Belgium especially, are of great value, and celebrated for their delicacy and beauty. The commerce, both foreign and domestic, is extensive. Spain and Portugal, though among the most fertile countries of Europe, have, until within a few years, given but little attention to commerce. Their agriculture and manufactures are also comparatively unimportant.

Minerals. — Western Europe abounds in valuable minerals. Belgium, next to England, furnishes more coal than any other country in Europe. Over 800 iron-works are in operation in France. The quicksilver mines of Almaden, in Spain, are among the richest in the world.

DENMARK. *See Map, page* 537.

This kingdom comprises the northern part of the peninsula of Jutland and several islands near the entrance of the Baltic Sea. The Faroe Islands, Greenland, Iceland, Jan Mayen, and three small islands of the West Indies, also belong to Denmark.

A Scene in the Netherlands.

The surface of the country is very low and flat; some portions of the northern coast are below the level of the sea, from which they are defended by dikes.

The climate is moist, and milder than that of the northern German States. The soil is suitable for agriculture, and affords excellent pasturage.

Productions. — Cattle-raising and dairy products, agriculture, commerce, and the fisheries, are the sources of wealth. There are no mines, nor forests, and but few manufactures.

Towns.—Copenhagen is the capital, and one of the finest cities in Northern Europe.

THE NETHERLANDS AND BELGIUM.

See Map, page 538.

Surface.—The coast is so low that, in many places, dikes are necessary to prevent the land from being overflowed.

Productions.—The wealth of the Netherlands is derived from her dairy products, her fisheries, manufactures (especially of linen and distilled liquors), and commerce. The commerce is very large, particularly with the East Indies. Belgium is rich from her agriculture, her mines and manufactures, and is the most densely populated country in the world. Among the most celebrated manufactures of Belgium are the carpets and the laces of Brussels and Mechlin.

Commerce.—The position of these countries, and their numerous navigable rivers, give them remarkable facilities for commerce, in which they are second only to Great Britain. Internal communication is promoted by numerous canals. In the Netherlands, especially, the canals run through the streets of the towns, and form a complete network over the country.

Inhabitants.—The people of the Netherlands, usually called Dutch, are very industrious, and are generally better educated than the inhabitants of any other part of Europe, except Prussia and some of the smaller German states. The Belgians are not less industrious, but education is not so general.

Towns.—The Hague is the capital of the Netherlands. Brussels, the capital of Belgium, is noted for its manufactures of carpets and laces. Amsterdam, Antwerp and Rotterdam are the chief commercial cities of the two countries.

The foreign possessions of the Netherlands are, next to those of Great Britain, the most important and valuable belonging to any nation. They include most of the East India Islands (excepting the Philippine group); the western half of Papua; and a part of Guinea, and some of the smaller West India Islands, in America. Belgium has no foreign possessions.

Mont Blanc.

FRANCE. *See map, page* 533.

France is one of the richest and most powerful countries in the world. The position of the country and the fertility of its soil give it great commercial and agricultural advantages.

Surface.—France is separated from Spain on the south by the Pyrenees; from Italy and Switzerland on the east by the Alps and the Jura Mountains. The Cevennes and the Auvergne Mountains form the western part of the Central plateau. The Vosges Mountains lie at the north-eastern extremity of the plateau. The rest of the surface belongs to Lowland Europe. In the south-west are the Landes, extensive plains of shifting sands, which the inhabitants cross on stilts.

Climate and Soil.—No country in Europe possesses a more favourable climate than France, and no one surpasses it in the value and variety of its vegetable products.

Production.—Agriculture, manufactures, mining, and commerce are the principal branches of industry. The olive, the mulberry-tree, and the orange are cultivated in the provinces bordering on the Mediterranean; grain, hemp, and flax are raised in the middle and northern provinces. Iron, coal, lead, and other useful minerals are abundant. The vineyard products are the most celebrated of any in the world. Beet-root sugar is very extensively manufactured. France exports more wine, brandy, and silk goods than any other country. The French are noted for their manufactures of jewellery, gloves, toys, perfumery, and other articles of finery, many of which are sent to the United States.

Inhabitants.—The French are noted for their literary and scientific attainments, and for their politeness, and love of military glory.

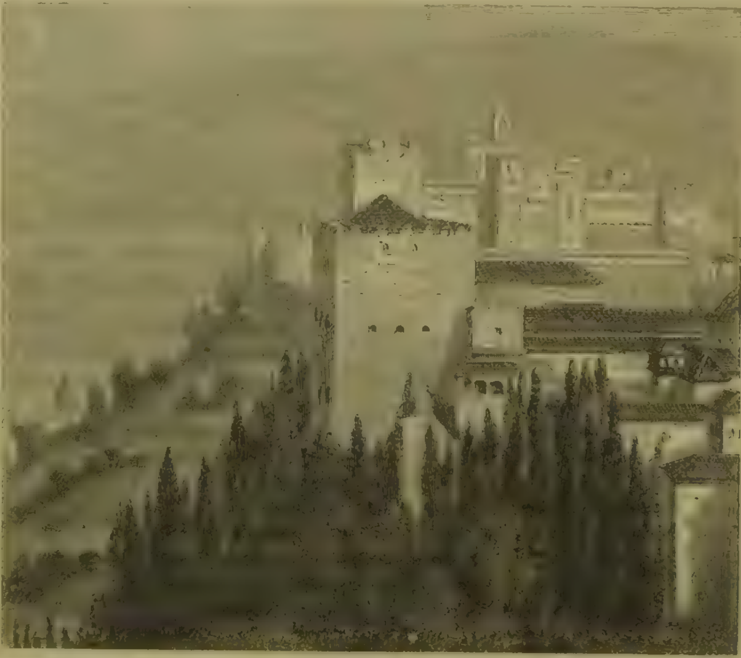
Towns.—Paris, the capital of France, and the largest city on the continent of Europe, is the most splendid city in the world, and is a great centre of refinement and civilisation. The French language is spoken by the upper classes of Europe, and the influence of Paris is felt throughout the civilised world, in all that concerns taste and fashion. Havre is the port of Paris. Marseilles, St. Nazaire, and Bordeaux are the principal seaports. Most of the wine is exported from Bordeaux. Versailles contains one of the most magnificent palaces in the world. Rouen is the great seat of the cotton and Lyons of the silk manufactures. The Island of Corsica, celebrated as the birthplace of Napoleon, belongs to France. The foreign possessions of France are Algeria in Northern and Senegal in Western Africa, the Island of Réunion, and some smaller islands in the Indian Ocean; Pondicherry, and a few other places in Hindustan; Lower Cochin China and Tongking, in Indo-China; New Caledonia, Tahiti, and the Marquesas Islands, in Oceania; and French Guiana, two small islands in the Gulf of St. Lawrence, Martinique, Guadeloupe, and a few other small islands of the West Indies in Amecica. France has also a protectorate over Tunis and Madagascar in Africa, and Cambodia and Annam in Asia.

VINEYARDS OF FRANCE.

SPAIN AND PORTUGAL. *See Map, page 534.*

The Spanish Peninsula comprises the two countries of Spain and Portugal. These were once very powerful nations, but their importance and the extent of their possessions are now greatly reduced.

Surface.—The interior consists of mountains and table-lands; approaching the coast, the country is undulating and level.



Alhambra, Spain.

Productions.—The most important of these are the vine, olive, mulberry, and orange. Immense flocks of sheep are raised on the table-lands of the interior, and great quantities of wool, wine, and silk are exported.

Inhabitants.—The Spanish and Portuguese are a reserved, dignified, and indolent people. The lower classes are very ignorant.

Towns. — Madrid, the capital of Spain, is noted for its palaces and paintings; Lisbon is the capital of Portugal and the chief commercial city. Barcelona, Valencia, Cadiz, and Malaga are the most important commercial cities of Spain; Lisbon and Oporto, of Portugal. We obtain sherry wine from Cadiz, port wine from Oporto, grapes and raisins from Malaga, and oranges from Valencia. The Balearic Islands, in the Mediterranean Sea, and Ceuta, a fortress in Africa, on the Straits of Gibraltar, also belong to Spain. The foreign possessions of Portugal are the Azores, Madeira, and Cape Verd Islands, west of Africa; Angola and Benguela on the western, and Mozambique, on the eastern coast of Africa; Goa and Macao, in Asia; and part of the island of Timor, in Oceania. The Spaniards delight in games and in all kinds of amusements. The bull-fight is a national game. The means for travel are very poor. Education is in a backward state. Other important cities in Spain: Valencia is noted for silks; Seville for art; and Malaga for grapes and wines. Palos is the port from which Columbus sailed on his first voyage across the Atlantic. Granada is celebrated for the Alhambra, an immense Moorish structure, whose interior is gorgeous beyond description. The town and fortress of Gibraltar, in the southern extremity of Spain, belong to Great Britain. The fortress is on an immense rock, 1,400 feet in height. It commands the entrance to the Mediterranean Sea, and is of immense strength.

Historical Notes.—About four hundred years ago Spain and Portugal were the foremost countries of Europe in commercial enterprise. Their fleets sailed on every known sea, and they took possession of every foot of territory that they could conquer and occupy. The discovery of America by Columbus was due to Spanish enterprise. Both nations gained a firm foothold in the New World, and the whole continent of South America, except Guiana, is held by descendants of Spanish and Portuguese. Spain has valuable possessions in the West Indies.

Andorra.—This little republic occupies a valley south of the Pyrenees. The population is only 5,000 or 6,000, but the country has been independent for more than a thousand years.

CENTRAL EUROPE. *See Map, page 533.*

Central Europe comprises Germany, Austria-Hungary, Switzerland, Italy, Turkey, Bulgaria and Eastern Roumelia, Servia, Roumania, Montenegro, and Greece.

Surface.—The northern part of Germany, including the greater portion of Prussia, and the province of Galicia (in Austria-Hungary), are parts of Lowland Europe. The country near the Baltic Sea is very low. The Great Plains of Hungary and Turkey are parts of the Basin of the Danube. The Plain of Lombardy, in Northern Italy, is drained by the River Po. The remainder of Central Europe is mountainous.

Rivers.—The most important commercial rivers of this section are the Danube, the Rhine, and the Po. Next to the Volga, the Danube is the largest river in Europe. The Rhine is famous for its grand and romantic scenery. Pleasant towns and villages lie nestled at the foot of lofty hills and graceful slopes clothed with vines; while the castles of feudal times frown from precipices apparently inaccessible. The Rhine, the Danube, the Po, and the Rhone rise very near one another.

Climate.—The climate of Central Europe is not generally so moist and warm as in the same latitudes of Western Europe.

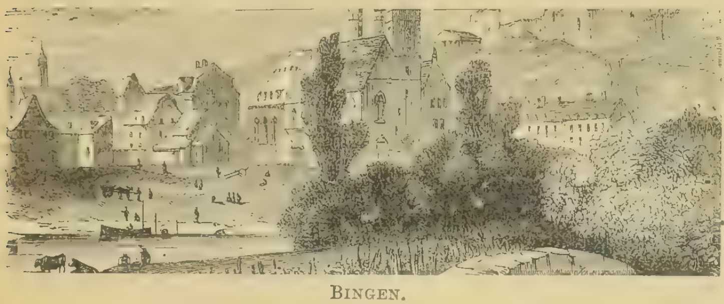
Productions.—The agricultural productions vary with the climate. Minerals are abundant in the mountainous regions. The manufactures are more noted for variety than for the great amount of any one particular kind. In the north, grain is the chief production. The vine is extensively cultivated in the central and southern regions, and the mulberry and olive are raised in the south. Great harvests of wheat are also produced on the plains which form the lower basin of the Danube. Oranges and lemons are raised in Sicily. Woollen, cotton, and linen goods are among the most important manufactures. Bohemia is celebrated for glass ware; Switzerland, for watches and jewellery; Italy, for braided straw, of which hats and bonnets are made.

The Commerce is conducted, on the north, through Bremen, Altona, Hamburg, and Dantzic; on the south, through Genoa, Leghorn, Brindisi, Trieste, Venice, and Constantinople.

EHRENBREITSTEIN.

GERMANY.

The empire of Germany is formed by the union of Prussia, Bavaria, Saxony, Würtemberg, Baden, and a number of smaller States which formerly had independent governments. Before their union under one government, the various States of the empire were ranged under two groups known as the North-German Confederation and South Germany. The former consisted of twenty-two States, of which Prussia was the largest and most important, while South Germany numbered four States. In 1871, all the States of Germany were formed into one empire, and the king of Prussia was made emperor. At the same time the provinces of Alsace and Lorraine, which had long belonged to France, were annexed to Germany, making it the second State of Europe, as regards population.



BINGEN.

Surface.—Germany has a fortunate position. The northern portion lies chiefly in the basins of the Baltic and North Seas, is drained by large rivers, and has a long line of sea-coast, and good harbours. East of the river Weser, the country is generally level, but in the southern portion, and especially near the river Rhine, it is mountainous and abounds in beautiful scenery.

Inhabitants.—The Germans are an industrious, intelligent, and well-educated people, a person being rarely found who cannot read or write. In Prussia, Saxony, and most of the other States, every child above the age of six is obliged to attend school. Great attention is paid to military education in Germany, and

HEIDELBERG.

COLOGNE.

every subject is compelled to serve a certain number of years in the army.

Productions.—The most important productions are grain, tobacco, hemp, and flax, potatoes and beet-root (for making sugar), wool, manufactures (including wine), and the useful minerals.

Towns.—Berlin is the capital of Germany and also of Prussia. It is a beautiful city, and is the largest in the empire. Munich, Dresden, Breslau, Cologne, and Strasburg are among the chief cities of Germany. Hamburg, Bremen, Konigsberg, and Dantzic are the principal commercial cities. The latter is one of the greatest grain-shipping ports in Europe. Many other towns in Germany are of large size; some are noted for remarkable events in history; others for magnificent churches or palaces; and others for their universities.

AUSTRIA-HUNGARY. *See Map, page* 535.

This empire comprises the empire of Austria and the kingdom of Hungary. The emperor of Austria is also king of Hungary.

Its surface is mountainous, except the great, treeless plain of Hungary, which is in the eastern part.

The mountains yield valuable minerals; the forests, lumber; and the plains and valleys, grain and grapes. Iron, coal, and salt are very abundant. Cattle and sheep are numerous on the pastures. Bears and other wild animals are hunted in the woods.

The principal occupations are agriculture, herding, and mining. The people comprise many nationalities. The court languages are the German and Hungarian.

Vienna, on the Danube River, is the capital and metropolis of the empire. It is a great centre of traffic, and one of the most beautiful cities in the world.

Buda-Pesth, two cities on opposite sides of the Danube, but connected by a fine suspension-bridge, form the capital and commercial centre of Hungary.

Prague is an important manufacturing and commercial centre.

Trieste is the chief seaport of the empire.

POLAND was formerly an important kingdom of Central Europe, but, after suffering many reverses, it is now divided among Russia, Germany, and Austria-Hungary.

SCENE IN SWITZERLAND.

SWITZERLAND. *See Map, page* 534.

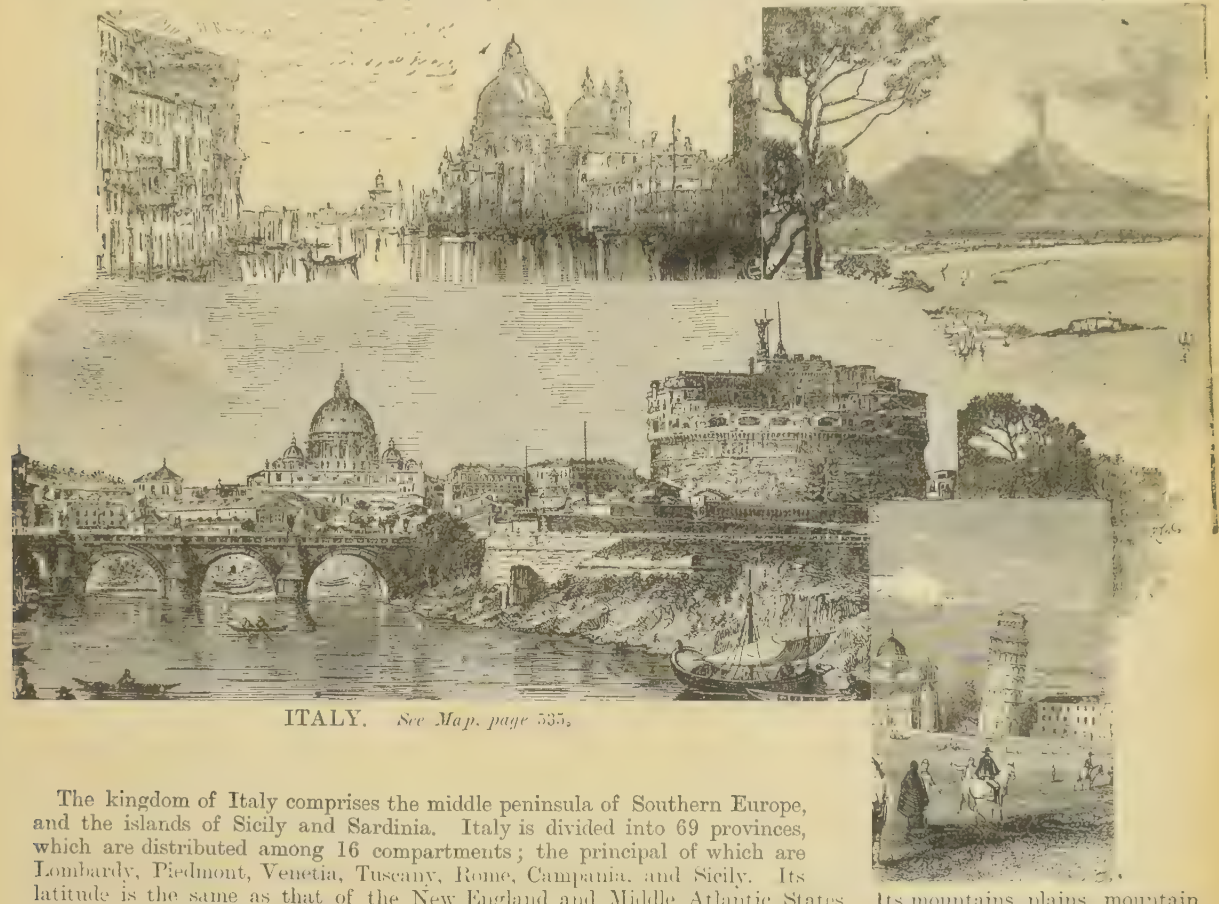
Switzerland is a republic, consisting of twenty-two States, or Cantons. It is the highest part of Europe. The scenery of Switzerland is on the grandest scale: beautiful lakes lie embosomed among the mountains, which tower above the limits of perpetual snow; immense glaciers glisten upon the mountain sides, and romantic valleys form the channels of impetuous streams.

Inhabitants.—The Swiss are noted for their love of liberty and attachment to their native country. Manufacturing small articles, such as watches, jewellery, and toys, is the leading business, and these articles are the principal exports. Most of the population speak the German language.

Italian is spoken in the Cantons adjoining Italy, and French in those adjoining France.

Among the celebrated mountains on the southern border of Switzerland are Rosa, St. Gothard, and Great St. Bernard. In the interior, are Finster, Aarhorn and the Jungfrau. The principal lakes are Geneva, Constance, Neufchatel, Zurich, and Lucerne. Nearly all the lakes in Switzerland are becoming gradually smaller. This is caused by the wearing away and consequent lowering of the beds of the outlets, and by the depositing of soil in the basin of the lake, by the inlets. Several ancient lakes have thus disappeared. Swiss manufactures include cotton and silk goods, embroidery, and watches.

Towns.—Berne is the capital. Geneva is the principal seat of the manufacture of watches and jewellery.



ITALY. *See Map, page 535.*

The kingdom of Italy comprises the middle peninsula of Southern Europe, and the islands of Sicily and Sardinia. Italy is divided into 69 provinces, which are distributed among 16 compartments; the principal of which are Lombardy, Piedmont, Venetia, Tuscany, Rome, Campania, and Sicily. Its latitude is the same as that of the New England and Middle Atlantic States. Its mountains, plains, mountain passes, valleys, streams, and lakes are celebrated for their picturesque beauty.

The plain of the Po is said to be the most fertile in the world. The Po, the largest river in Italy, is fed by the outlets of Como, Maggiore, and other lakes of the Alps. The narrow plains along the coast are marshy and unhealthy.

Agriculture is the leading occupation of the people. In the north, where the climate is temperate, grain is cultivated; and in the warm south, orange and olive groves, and vineyards, cover large sections. The mulberry-tree is extensively cultivated for the support of the silk-worm. The manufactures include silks, velvets, olive-oil, and wine.

Rome, the capital, is one of the most famous cities in the world. Rome was founded by Romulus, about 750 years before the Christian era. The grandest and most noted ruins of the ancient city are the Forum, Coliseum, baths, and several triumphal arches. It was built on seven hills, and has been called the Eternal City. It is divided into two parts by the Tiber River. The present city contains St. Peter's, the most magnificent cathedral in the world; the length of which is over 600 feet, the width 280 feet, and the height 430 feet. Adjoining it is the palace of the Vatican, the residence of the Pope. The museums and galleries of Rome contain many of the best paintings and other works of art in the world. Rome is, therefore, a city of art and artists.

Naples, the largest city in Italy, is situated on the beautiful Bay of Naples. Near Naples, is the celebrated volcano Vesuvius, and the ruins of Pompeii and Herculaneum, two cities destroyed by eruptions of the volcano, in the first century. Silks, macaroni, and coral ornaments are manufactured in Naples. In and around the city roses and other flowers bloom in the gardens, and orange-trees bear fruit in the open air, even in winter; while in New York, which is in the same latitude, the winters are remarkable for cold weather and deep snow.

Milan contains a grand cathedral and celebrated works of art. The Cathedral of Milan, built of white marble, is one of the most celebrated in the world. On its spires are about 5,000 statues.

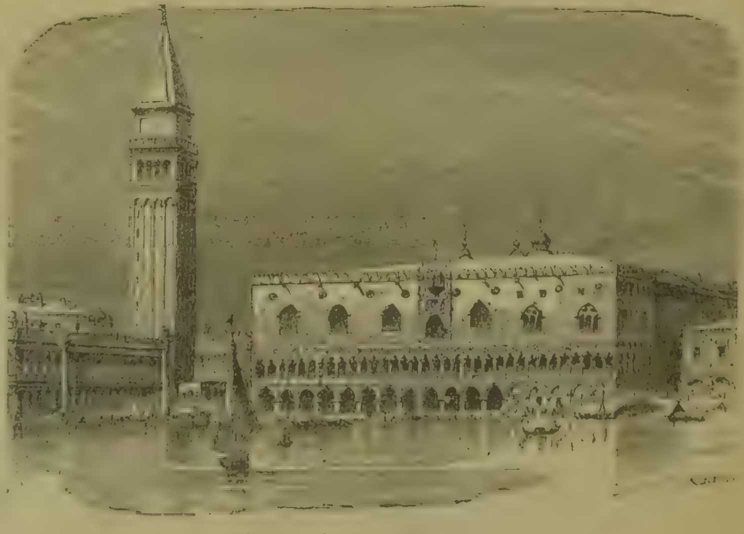
St. Peter's Rome.

Venice is built on seventy small islands, between which are canals, used for streets. People, usually, go from one part of the city to another in gondolas instead of carriages. The houses are built on piles. Venice was built on islands at the head of the Adriatic Sea, because, when Italy was invaded by barbarians in the fifth century, many of the inhabitants fled to the islands for refuge. In the fifteenth century it was one of the most prosperous and powerful cities in the world. Its commerce and manufactures brought it great wealth. It is celebrated for fine glass ware.

TURKEY IN EUROPE. *See Map, page 536.*

Turkey in Europe, until recently, comprised all the smaller countries between it and Austria. Its government is under the sultan, who is the ruler of the Turkish Empire and the head of the Mohammedan religion. The sultan is an absolute monarch. His prime or chief minister is called the grand vizier. The Turkish government is sometimes called the Sublime Porte, from the magnificent gate of the sultan's palace, where, in former times, the ruler was accustomed to sit and dispense justice. Mohammedanism, or Islamism, is a religion founded by Mohammed, in the seventh century. Its doctrines, or revelations of Mohammed, are contained in a collection of writings, called the Koran.

The Turkish Empire includes Turkey in Asia, Egypt and Tripoli, in Africa, and the western side of Arabia.



Ducal Palace, Venice.

Constantinople is the capital of the Turkish, or Ottoman, Empire. Its situation commands the shores of both Europe and Asia, and the trade of the Mediterranean and the Black Sea.

Salonica is the principal port of Turkey. It exports grain, tobacco, silk, and wool.

Bulgaria and **Eastern Roumelia** formed a part of the Turkish Empire until 1878, when, by the Treaty of Berlin, they were made practically independent. Bulgaria became at that time an independent Principality, ruled by a Christian Prince, who was elected by the people. With the exception of an annual tribute to the Porte, the government is entirely independent. Eastern Roumelia at the same time was created a separate State, but has since been practically united to Bulgaria. Sophia is the capital of Bulgaria, and Philippopolis of Eastern Roumelia.

Servia and **Roumania**, also parts of the Turkish Empire until 1878, are independent monarchies. Montenegro is an independent principality. Bucharest and Jassy in Roumania, and Belgrade in Servia, are the principal cities.

On the Bosphorus.

GREECE. *See Map, page 535.*

Greece in ancient times was in advance of all other nations in civilisation and learning. In the fifteenth century it was conquered by the Turks, but the Greeks revolted in 1821, and achieved their independence. The government is a limited monarchy. Almost every part of the country is rendered interesting by some historical event, or by the remains of ancient temples and other structures. Most of the islands of the Archipelago belong to Greece; of these Negropont is the largest, but Syra is the most important.

Inhabitants.—The modern Greeks are a handsome people, but they are indolent and insincere. Education, of late years, has received considerable attention. The Greeks are skilful sailors, and carry on most of the commerce of the Levant. The leading articles exported are dried fruits, olives, olive oil, and silk.

Towns.—Athens is the capital and most important city of Greece. It was one of the most celebrated cities of ancient times, the birthplace of many renowned philosophers and orators, and the centre of art and learning. Syra is the centre of steam navigation in the Eastern Mediterranean. Zante and Corfu are important ports. These three cities are situated on islands of the same name.

ASIA. *See Map, page 538.*

PHYSICAL FEATURES.

Position.—Asia is the north-eastern division of the Eastern Continent. It is in the North Frigid, North Temperate, and Torrid Zones. It extends from 2° to 78° north latitude, and from 170° west to 27° east longitude.

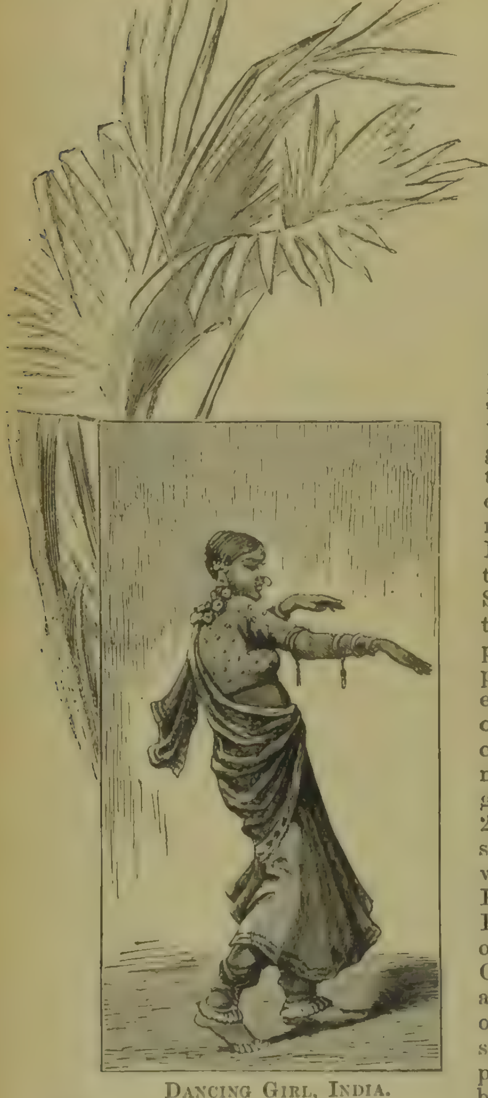
Size.—Asia is the largest of the Grand Divisions. It has an area of about 16,000,000 square miles, nearly one-third of the land-surface of the globe. Its length from east to west is about 6,000 miles, and its breadth from north to south 5,200 miles. It has a coast-line of 35,500 miles. It contains the highest mountain-chains and peaks in the world; the loftiest and most extensive plateaus; the deepest and greatest depressions; and the largest lowland plains, seas, and peninsulas.

Outline.—Asia has a very irregular outline. Its peninsulas occupy one-fifth of its area. There are numerous islands on the eastern and the southern coasts, and a few bleak groups are on the northern coast.

Surface.—Like Europe, Asia is divided by its principal mountain-system into two parts—a highland region in the south and a vast lowland plain in the north. Europe and Asia closely resemble each other in their general structure, and some geographers consider them as constituting, physically, but one continental mass.

Highland Asia consists chiefly of the Plateau of Thibet, the Plateau of Iran (or Turan), and the Plateau of Asia Minor. It includes also the southern peninsulas and the Great Central High Plain. The Plateau of Thibet is the loftiest table-land in the world. At the western end of it is the Plateau of Pamir, a great mountain-knot from which several of the mountain-systems of Asia radiate. The Peninsula of Indo-China is traversed by mountain-chains that extend in a southerly direction from the Plateau of Thibet, decreasing in elevation until they terminate in the Malay Peninsula. The Plateau of Deccan, which forms the Indian Peninsula, is a low triangular table-land whose average height is about 1,000 feet. The Plateau of Iran consists mainly of salt steppes and deserts, but some of the mountain-valleys are well watered and fertile. The average elevation of the plateau is 5,000 feet. The Plateau of Asia Minor has an average elevation of 3,000 feet. East of it is the volcanic region of Armenia, whose loftiest peak is Mount Ararat. The Peninsula of Arabia

COLOMBO, CEYLON.

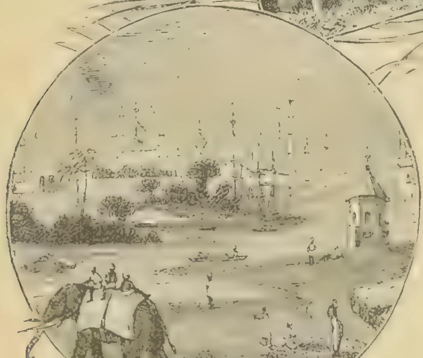


DANCING GIRL, INDIA.

consists of a central mountainous tract, well watered and fertile; a desert belt with oases abounding in date-palms; and a coast region varied by arid plains and highly productive districts. The Great Central High Plain has an average elevation of 4,000 feet. The Desert of Gobi, a rainless, sandy region, lies within its limits.

Lowland Asia includes the Plains of Siberia and China, and part of the Aralo-Caspian Interior Basin. The Plain of Siberia consists of steppes, forest-regions, and frozen swamps called Tundras. The Aralo-Caspian Interior Basin is a vast depression, situated partly in Europe, partly in Asia. The Caspian Sea and the Sea of Aral lie in its lowest levels. The Plain of China is the most densely populated region on the globe. It is well watered, extremely fertile, and cultivated like a garden. It resembles the rich river-plains of India in the strong contrast that it presents to the neighbouring barren plateaus. Asia is crossed by a system of mountains that form a continuation of the mountain-system of Europe. The Asiatic system from the Sea of Marmora to East Cape includes the Taurus, the Caucasus, the Elborz, the Hindu Kush, the Thian Shan, the Altai, the Yablonoi, and the Stanovoi Mountains. Asia resembles Europe chiefly in these particulars:—1. The principal mountain-system, with its intervening plateau, extends east and west; 2. North of this system a vast low plain stretches to the Arctic Ocean; 3. South of the system lie three extensive peninsulas with numerous mountain-chains. The giant ranges of the Himalaya, the Karakorum, and the Kuen Lun Mountains stretch eastward from the Plateau of Pamir. The Himalaya are the highest mountains in the world, and Mount Everest, one of their peaks, has the greatest known altitude. The Himalaya have an average elevation of 20,000 feet. At least forty of their peaks are higher than the loftiest summit of the Andes. North of the Himalaya lie cold, sterile plateaus; while south of them spread the rich, fertile plains of India. The Karakorum and the Kuen Lun ranges are scarcely inferior to the Himalaya in elevation. The Kuen Lun chain, the northern border of the Plateau of Thibet, is continued to the Pacific coast by the Chinese mountains. The Hindu Kush, the Thian Shan, the Khingan, and the Altai Mountains are lower than the Kuen Lun, yet they are of great height, and many of their peaks are covered with perpetual snow. Kamchatka, the Kurile Islands, Japan, Formosa, and the Philippine Islands abound in volcanoes; while Asia Minor, Persia, and India bear traces of volcanic action.

Drainage.—The rivers of Asia belong to the *Indian Ocean System*, the *Pacific System*, and the *Arctic System*. There are also numerous lakes and rivers that have no outlet to the sea. The most important rivers are the Euphrates and Tigris, the Indus, the Ganges, the Brahmaputra, and the Irrawaddy; the Cambodia (or Mecon), the Yang tse-Kiang, the Hoang Ho, and the Amoor; the Lena, the Yenisei, and the Obe. Among the rivers that have no outlet to the sea are the Tarim, the Jordan, the Amu (or Oxus), the Sihon, and the Ili. The Yenisei is the largest river of Asia. The Ganges springs from the glaciers of the Himalaya, 14,000 feet above sea-level. It forms an extensive delta, through which the Brahmaputra also reaches the sea. The annual overflow of the Indian rivers makes India a land of great fertility. The Yang-tse and Hoang rivers are subject to great changes, brought about by the shifting of their channels. In 1851 the Hoang-Ho burst through its banks and poured its waters into the Gulf of Pechelee, and within two years its lower course had so changed that the mouth of the river had shifted 250 miles from its former position. Kiang and Ho signify rivers. The delta of the Ganges comprises a large area known as the Sunderbunds. The whole tract has been formed from the soil brought down by the current of the river. From recent surveys, it has been ascertained that the Sunderbunds are slowly sinking, and that their subsidence goes on about as rapidly as the elevation from the increasing deposits of sediment. There are few fresh-water lakes in Asia, but the Aralo-Caspian Basin and the interior plateaus abound in salt lakes. The Caspian Sea, the Sea of Aral, the Dead Sea, and Lake Balkash are the most important salt lakes. The Caspian Sea, which is the largest salt lake in the world, is about five times as large as Lake Superior. Its surface is 84 feet below the level of the ocean. The Sea of Aral is a little larger than Lake Michigan. The surface of the Dead Sea (the lowest depression known) is 1,300 feet below the level of the ocean. Lake Balkash is a shallow body of water about as large as Lake Ontario. Lake Baikal is the most extensive fresh-water lake. It is the largest mountain-lake known. Sir-i-Kul, a small, deep lake on the Plateau of Pamir, is said to be the highest lake on the globe.



Scenes in Asia.

Climate.—As Asia extends from 2° north of the Equator to a latitude midway between the Arctic Circle and the North Pole, and presents, besides, unequalled diversity of surface and soil, it has every variety of climate. The Plain of Siberia has long severe winters, and short summers with days of intense heat. Central Asia, between the Altai and the Himalaya Mountains, has the climate of the Temperate Zone, and is subject to extremes of heat and cold. In Thibet the great elevation makes the country so cold as to be almost uninhabitable. The southern peninsulas and the western plateaus have, in general, a tropical climate. The plateaus of Arabia, Iran, Thibet, the Deccan, and the Great Central High

Plain are, in general rainless. The mountains south and west of these regions rob the sea breezes of their moisture, and render the country dry and sterile. These deserts are rainless, not because the air contains no moisture, but because the winds pass over a region intensely heated, and, until they reach the high mountains, the air is not sufficiently cooled to permit the condensation of the moisture it contains. The southern part of China, India, and the south-east coast of Arabia lie in the region of the south-west monsoons, and have abundant periodical rains. The Khasi Hills (100 miles north-east of Calcutta) have the greatest rainfall in the world. Eastern China, Pamir, the Thian Shan, the Caucasus, Asia Minor, and other western regions have variable rains according to the variable winds of the Temperate Zone. Taken as a whole, Asia has less rain than Europe or America.

Productions and Animals.—The great variety of climate produces a corresponding variety of vegetation, and most of the food-plants and fruits of the world are natives of Asia. Here originated wheat, rye, rice, barley, oats, buckwheat, and the sugar-cane; and here is the home of the grape, the peach, the melon, the apricot, the apple, the pear, the plum, the orange, the date, the fig, the olive, the cherry, the almond, the bread-fruit, the cocoa-nut, the banana, the sweet potato, and the yam. Tea, cotton, hemp, flax, and jute also are natives of Asia. Palms, bamboos, and banyans, teak, ebony, and sandal-wood, abound in the tropical forests; and camphor, gum-arabic, and india-rubber, with the greatest variety of spices, gums, resins, and medicinal plants, are among the most valuable productions. Gold, silver, copper, iron, tin, mercury, nickel, coal, petroleum, salt, and sulphur are found in abundance; while diamonds, rubies, sapphires, topazes, and pearls of great beauty make Asia unrivalled among the Grand Divisions in natural wealth. The camel, the Cashmere goat, and the yak are natives of Asia. The elephant, the lion, the tiger, the leopard, the panther, the rhinoceros, the hyæna, the buffalo, the zebu, the peacock, the ostrich, and the golden pheasant are found in various parts.

Inhabitants.—Of all the Grand Divisions, Asia has the largest population, and presents the greatest diversity of race, religion, manners, and civilization. The inhabitants number about 800,000,000. Asia is regarded as the cradle of the human race, and its civilisation is the oldest in the world. The strongest evidences of history, language, and science point to the highlands of Asia as the birthplace of man. Somewhere in the valleys of Persia, the old name of which was Arya, there lived a people who built houses, cultivated the soil, and had forms of government. They believed in the Omnipotent Being, and also in a spirit of evil. Near the Aryan race, somewhere in the valley of the Euphrates and Tigris rivers, another race of people had risen. This people, now known as the Semitic race, had also reached a high state of civilisation. The Aryan race colonised Europe; the Semitic remained in Asia. The Persians and Hindoos are the descendants of the Aryan race who remained in Asia. In Europe they separated into four branches. The Semitic race includes the Arabs, Syrians, and Jews. Within its limits the principal religions of the world originated. Buddhism, Brahminism, and Mohammedanism are now the prevailing forms of belief. A majority of the people belong to the Mongolian race; but a large number, including the Hindus, the Arabs, the Persians, and the Afghans, are Caucasians. Malays inhabit the Malay Peninsula.

POLITICAL DIVISIONS.

Asia includes within its boundaries a large part of the Turkish and Russian Empires, the capitals of which are in Europe; the Chinese Empire and its Dependencies; the Empire of Japan; Corea; the several States of India and Indo-China, some of which are independent and the others more or less under the control or protection of European powers; the Confederation of Beluchistan, Afghanistan, Persia, and the several powers of Arabia.

ASIATIC TURKEY.

Asiatic Turkey is a part of the Ottoman Empire. On account of its prominence in history, it is one of the most interesting countries on the globe. It contains the ruins of many of the most powerful cities of ancient times, and is full of places which are connected with important events.

Towns.—The principal commercial city is Smyrna, from which fruits, rags, and various other articles are exported. Mocha exports large quantities of coffee.

Syria (one of the provinces) includes Palestine, or the Holy Land, in which most of the events recorded in Scripture took place. (*See Map, page* 540.) Jerusalem is the holy city of the Jews, and, to the Christian, is one of the most interesting places in the world. Mecca is the holy city of the Mohammedans.

ASIATIC RUSSIA.

Asiatic Russia comprises more than one-third of Asia. The principal divisions are Siberia, Trans-Caucasia, and the Trans-Caspian Territory. The island of Saghalin belongs to Russia, and the Russian possessions in Asia have greatly increased in extent during the past few years. The Kirghis country, the northern part of the Amoor Basin, a small part of Sungaria, and the Trans-Caspian Territory have lately come under Russian control.

Siberia occupies the entire northern part of Asia. Owing to the severity of the climate, much of this immense region is unfit for extensive settlement; yet its mines of gold and silver, and its fur-bearing animals, render it of great value to Russia. Fur-hunting in Siberia is next to mining in importance. The animals hunted are the sable, ermine, elk, deer, bear, wolf, marten, beaver, and fox. Fossil-ivory is found all over Northern Siberia, and in the islands north of it. This ivory is from the remains of mammoth,—huge animals which perished ages ago, when the tropical climate of Siberia was suddenly changed. Their dead bodies carried north by the rivers and floods, became imbedded in the soil, which froze and preserved them in ice. Ivory is, therefore, obtained from four sources:—the elephant, walrus, ivory-nut, and fossil mammoth.

Inhabitants.—About three-fourths of the population are Russians. The remainder consists of native tribes. Siberia has long been used by the government as a place of banishment for exiles and criminals, and their descendants form most of the population.

Towns.—Tashkend, Tomsk. Tobolsk, and Irkutsk are the largest towns. In Yakootsk the mercury falls in winter to 70° below zero. In the short, hot summers, potatoes, cabbage, and a few other vegetables grow. The gulfs and bays on the northern coast are frozen for nine months in the year. Kiachta, in Siberia, and Maimatchin, in China, are places where an immense inland trade is carried on between China and Russia.

Trans-Caucasia is south of the Caucasus mountains. Tiflis, the capital, has a large caravan trade. The inhabitants, a vigorous, handsome race, are principally engaged in agriculture.

The Trans-Caspian Territory includes the Turkoman country, or West Turkestan (Khiva, Bokhara, Merv), and a small part of Sungaria. The various States of West Turkestan are called Khanates, each of which has a native ruler, or Khan. All of these States are more or less subject to Russia, and Russian influence is supreme throughout most of Central Asia. In the south, the inhabitants are engaged in agriculture; but the wandering tribes, in the north and west, subsist by war and the chase, and their chief wealth is in their immense numbers of camels, horses, sheep, and goats.

Towns.—Bokhara, Khokan, and Khiva are each the capital of a State, or Khanate, of the same name.

Street in China.

THE CHINESE EMPIRE. *See Map, page 539.*

The Chinese Empire is larger by one half than the United States, and contains about six times as many inhabitants. China, its most important division, contains the greater part of the population. The land is fertile and well cultivated, agriculture being the chief occupation of the people. Rivers and canals are numerous, and travelling is generally done in boats. The food of the Chinese consists, principally, of rice and fish. The leading exports from China are tea, silk, porcelain, and pottery. Its trade is carried on mainly with Great Britain, Australia, and the United States, by means of ships; and with Russia, by means of caravans. Many of the inhabitants of the other divisions of the empire are wandering tribes, whose occupation is the raising of horses, sheep, and goats. Pekin, the capital of the Chinese Empire, is noted for its surrounding walls, magnificent gates, and heathen temples. Its houses are only one or two stories high. Its population is greater than that of New York City. Canton is the second city in the empire.

Outer Gate of Asakusa Temple, Japan.

Thibet is only under the supervision of

THE CULTIVATION OF TEA. THE GREAT WALL OF CHINA.
A PROCESSION IN CHINA. A CHINESE JUNK. A PAGODA, OR TEMPLE.

the Chinese government. Lassa is the capital and the residence of the Grand Lama, who is worshipped as the representative of the Supreme Being.

MONGOLIA is occupied by pastoral tribes, whose chiefs, in most cases, own only a nominal subjection to China.

GATHERING TEA.

EASTERN TURKESTAN was a province of China until 1865, when it established an independent government. It was reconquered by China in 1877, and now forms a part of the empire, with a special political organisation. Sungaria, lying between the Thian Shan and Altai Mountains, is important on account of being the gateway of the caravan trade between Eastern and Western

Asia. About one-tenth of this country has lately been added to the Russian possessions.

Productions.—The most important productions are rice, millet, tea, and silk. Rice and millet are the chief articles of food for the entire population. Tea, silk, and porcelain are the principal exports. There are valuable mines of iron, coal, copper, and gold. The Chinese work with exquisite skill in ivory, wood, and pearl, and make the most beautiful porcelain and silk.

Government.—The government is an absolute monarchy. The emperor possesses unlimited power over all beneath him, and claims the title of "Son of Heaven." The officers of government are styled mandarins. The laws are severe; for trifling offences, punishment with the bamboo is inflicted, while serious crimes are almost always punished by death.

Towns.—China contains many great cities, most of which, however, are known to Europeans only by name. Pekin is the capital and the largest city. Shanghai and Canton are the chief centres of the foreign trade. Ningpo, Foochow, Nankin, and Amoy are the other most important ports. Until very recently these were the only seaports open to foreign trade. By late treaties, however, all of China is open to the intercourse of foreign nations. Hainan and Formosa are Chinese islands. Hong Kong belongs to the British, to whom it was ceded in 1843. Macao belongs to the Portuguese. It was granted to them 250 years ago, for assistance in clearing the coast of pirates.

Corea is a kingdom which was tributary to China before 1876, but is now entirely independent, having its own sovereign and its own laws. Seoul, or King-ki-tao, is the capital.

JAPAN. *See Map, page* 539.

The Empire of Japan consists of islands, which contain mountains, streams, forests, and a well-cultivated soil. The principal occupations of the Japanese are agriculture, manufacturing, and mining. Its exports comprise tea, rice, silks, porcelain, fans, and lacquered ware. Tokio the capital, is the residence of the emperor, called the mikado. Its chief port is Yokohama.

A Japanese Junk.

INDIA AND INDO-CHINA. *See Map, page* 539.

India consists of two peninsulas: Hindustan, with the Deccan, and Indo-China, or Farther India. Both peninsulas are remarkable for the fertility of the soil, and yield, in great abundance, the products of the tropical regions in which they are situated.

Climate.—The climate of India is greatly influenced by the monsoons, or periodical winds which prevail in the Indian Ocean. These winds blow from the north-east from October to April, and from the south-west during the remaining months of the year. On the western coast, the south-west monsoon brings the rainy season, and the north-east the dry season. On the eastern coast, on the contrary, the rains occur during the north-east monsoon, and the dry season during the south-west, the winds in each case bringing the rain from the neighbouring bodies of water.

Productions. The most important productions are rice, cotton, and wheat. Rice forms the principal food of the natives, and almost their entire clothing is made from cotton. The other chief exports are tea, indigo, opium, sugar, shawls, carpets, silk, and various drugs, spices, and perfumes. The tea trade is important, and is rapidly increasing.

Animals.—The most remarkable animals are the elephant, rhinoceros, tiger, and a huge serpent called the python. The Royal Bengal tiger is the largest, fiercest, and most beautiful of the tiger species. Elephants are used in tiger-hunting, which is a favourite amusement in India.

The Hindus are divided into four castes or classes, according to their occupation; as the priest, soldier, merchant, or labourer. The pariahs are the outcasts of these classes. The son inherits the occupation of his father from one generation to another. The male members of one caste may legally marry into a caste below their own, but not into one above. There is no distinction of caste in the countries of Farther India, and in British India it is not so rigidly observed as formerly.

British India.—Nearly the whole of the western peninsula (Hindustan and the Deccan) and the north-western part of Indo-China belong to, or are tributary to, Great Britain. These countries were long subject to the East India Company, but, in 1858, their territories were transferred to the Crown. The British, however, who rule this vast region, form but a small part of the population. The French and Portuguese have some small settlements upon the coast.

In Indo-China, the British possessions include Lower Burmah and the protectorate established over some small Malay States, which, with the islands of Penang and Singapore, constitute the territory called The Straits Settlements. The kingdom of Upper Burmah is now partially conquered by the British, who claim entire possession of the country. They also possess Ceylon, a fine, populous, fertile island, and the Laccadive and Maldive Islands, which are of coral formation and but thinly inhabited. These territories, in both Hindustan and Farther India, are known under the general name of British India. They have a government similar, in some respects, to that of the Dominion of Canada, and are under the control of the Governor-General, who resides at Calcutta. The Queen of England is also "Empress of India."

Towns.—India contains many important cities. Calcutta, the capital, is a very large city, and the seat of an extensive trade. Bombay and Madras are next in commercial importance. Benares is the seat of Hindu learning. Pondicherry is the capital of the French possessions in Hindustan, and Goa of those belonging to Portugal. The larger cities of India are connected by railroads, which have greatly increased and developed the inland trade. Rangoon is the most important town of Lower Burmah, and famous for its golden pagoda. Singapore, at the southern extremity of the Malay Peninsula, is remarkable for its situation and its trade. Mandalay was formerly the capital of Burmah, but is now controlled by the British.

Sand Spouts in the Desert.

Independent States.—Among the mountains forming the northern boundary of India are several States which are not under the control of European Powers. Kafiristan is a very mountainous country lying north of Afghanistan, between the Russian and the English possessions. This state, in connection with a part of Pamir, is independent, and inhabited by the Siah Posh, a remarkable race resembling the inhabitants of Europe. The Mohammedans have many times invaded, but never conquered these countries. Kashmir, Nepal, Bhotan, and Sikkim, on the northern slope of the Himalaya Mountains, are independent States. Kashmir is the most important, and is an exceedingly fertile country. Sirinagar is the capital. Many of the States of Hindustan, such as Hyderabad, Mysore, etc., are nearly independent. They pay an annual tribute to Great Britain under guarantee of protection. Many other States, besides paying tribute, place a force of natives at the disposal of the British to resist a common enemy. Besides Burmah and the other British possessions, Indo-China comprises the Kingdom of Siam, with its tributaries, and the French Possessions, which include Lower Cochin-China, Tongking, and the protected kingdoms of Cambodia and Annam. Little is known about Siam except that it is a rich and fertile country, to which are tributary some States of the Malay Peninsula and part of the Shan Tribes, who live in Central Indo-China. Bangkok, the capital, is a floating city; for many of the houses are built upon rafts, which line both banks of the great river Meinam for several miles. The most important cities of the French possessions are Hanoi or Kesho, in Tongking, and Saigon, in Lower Cochin-China. The latter is an important, well-built, and populous city, and one of the principal seaports of the Indies. Udong is capital of Cambodia, and Hue of Annam.

AFGHANISTAN AND BELUCHISTAN.

The greater part of this region is mountainous and barren, though there are many fertile valleys. The inhabitants of the barren regions generally lead a nomadic life, and are rude, turbulent, and warlike. The fertile portions are occupied by a settled population, and contain several large cities.

Towns.—Cabul is the capital of Afghanistan, and Herat is the principal city. Kelat is the capital and largest city of Beluchistan, which is a confederation of Khanates.

PERSIA.

The table-land which forms the greater part of Persia is dry and barren, and subject to great extremes of heat and cold; but the mountain valleys, and other well-watered tracts, are exceedingly fertile.

Productions. — The natural productions are fruits, grain, rice, cotton, assafœtida, and the vine. The people are very skilful in the making of various silk and cotton fabrics, shawls, carpets, leather, and perfumery. The government of Persia is a despotic monarchy. The sovereign is called the Shah. The chiefs of the warlike mountain-tribes, and other unsettled portions of the population, are but little dependent on the royal authority.

Towns.—Teheran is the capital. Tabreez, Meshid, and Ispahân are important cities. Bender-Bushire is the principal seaport. The British government, as the result of hostilities with Persia in 1856 and 1857, may be said to have the control of the Persian Gulf, having gained a station at Bender-Bushire, and several other places on the coast.

ARABIA.

The greater part of Arabia is a desert plateau. In the interior, however, are ranges of low mountains and many fertile valleys. There is also a fertile belt of low plains along the coast. The principal productions are dates, figs, and other fruits, spices, coffee, and aromatic gums. Pearls are obtained in great numbers in the Persian Gulf. The camel, which affords almost the only conveyance for goods and passengers across the desert, is the most important animal. The Arabian horses are celebrated for their beauty and speed, and are regarded by their owners with great affection.

Arabia has never been subject to one sovereign, but the Turkish Empire has a religious and semi-political power along the western coast in Hedjez and Yemen, where Mecca and Medina, the sacred cities of the Mohammedans, are situated. Arabia includes three principal powers—Shomer and Nejed, which have a fertile soil, a settled population, and some well-built towns and cities, and the Sultanate of Oman, which includes the eastern and southern parts of the peninsula, portions of the Persian Gulf coast, and some districts on the coast of Beluchistan.

Inhabitants.—A large part of the population are inhabitants of the desert, styled Bedouins, who look with contempt upon the dwellers in the towns. The Bedouins are a wandering people, devoting themselves to the care of their camels, horses, goats, and sheep. They are generous and hospitable, but quarrelsome, revengeful, and addicted to plunder.

Towns.—Muscat is the largest and most important city. Hayel and Riad are the principal inland towns. Riad is the capital of Nejed. Muscat is a walled city, and has a good harbour well protected by forts. It is the commercial emporium for Persia and Arabia, and is the centre of the pearl trade. Aden belongs to Great Britain.

AFRICA. *See Map, page* 540.

PHYSICAL FEATURES.

Position.—Africa is the south-western division of the Eastern Continent. It is in the North Temperate, Torrid, and South Temperate Zones. It extends from 37° N. to 35° S. latitude, and from 52° E. to 17° 30′ W. longitude.

Size.—Africa ranks next to Asia in size. It occupies about two-ninths of the land-surface of the earth, and is more than three times as large as Europe. Its area is nearly 12,000,000 square miles. Its breadth is 4,700 miles, and its length 5,000 miles. The length of its coast-line is 16,200 miles, which is less, in proportion to the area of the country, than that of any other Grand Division.

Outline.—The outline is very regular; there are no gulfs, bays, or border-seas penetrating far into the land, and forming extensive peninsulas, as in Europe, Asia, and North America. Madagascar is the only large island on the coast. It is one-eighth larger than France. The islands west and north-west of Africa are of volcanic formation. Attached to Asia only by the narrow Isthmus of Suez, Africa is, naturally, a peninsula—the largest in the world; but the Suez Canal has left a strip of Egypt still connected with Asia, and made of the rest of Africa an immense island. The shortest distance across the Isthmus of Suez is about seventy-two miles; the line of the canal is one hundred miles. The average height of the isthmus above sea-level is scarcely ten feet. The Suez Canal was completed in 1869. It has a depth of twenty-four feet, and a clear channel seventy-two feet in width. By connecting the Red Sea with the Mediterranean, this canal furnishes a shorter route between European ports and India, than that around the Cape of Good Hope. It extends from Port Said, on the Mediterranean, to Suez, a sea-port town near the head of the Gulf of Suez. This is the tract which it is proposed to flood with water from the Mediterranean Sea, and thus form a new lake.

Surface.—Africa is a vast plateau of moderate elevation, surrounded by mountains which either descend abruptly to the sea or leave narrow coast-plains. The highest mountains lie near the eastern coast. The main forms of relief are the Northern, the Southern, the Eastern, and the Western Highlands; the Sahara, the Nubian Desert, and the Lake Region; the Interior

Basins; the Western Saharan Depression, the Chotts Region, and the Hawash Basin. The Northern Highland has an average elevation of 3,000 feet. It includes the Atlas Mountains, some of whose peaks are 12,000 feet high. The Southern Highland is surmounted by the Snow, the Kahlamba or Draken, and the Matopo Mountains. Its average elevation is from 4,000 to 5,000 feet, and its greatest height is 10,000 feet. The Eastern Highland includes the Plateau of Abyssinia, which is 7,000 feet high, and the mountains of the eastern coast, in which are the snow-topped volcanoes, Kilima-Njaro and Kenia, the highest peaks in Africa. The Western Highland contains the Kong Mountains and the Cameroons, which are volcanic peaks.

The Sahara is a broad plateau extending from the Atlantic Ocean to the Nile valley. It may be regarded as the western end of a desert belt that stretches across the Eastern Continent from the Atlantic Ocean nearly to the Pacific. It occupies one fourth of Africa, and has an average elevation of 1,500 feet; some of its regions

DESCRIPTION OF THE ENGRAVING.

In the engraving above, is represented the process of obtaining oil from the fruit of the oil-palm of Western Africa. After its husky covering is loosened, the fruit is thrown into vats full of water, and negro women tread out the oil.

The natives call the oil-palm their *Friend*. They use the oil as butter, and make from different parts of the tree various utensils and articles of dress. The palm-oil of commerce is used in the manufacture of perfumery soap, and candles, and for lubricating machinery.

Another valuable tree is the date-palm of Northern Africa. In Egypt, the harvest of its delicious fruit is celebrated every year with feasting and merry-making. It furnishes timber, thatch, materials for cordage, etc. In Madagascar, the Rufia-palm is no less useful. From the inner fibres of its leaves cloths are woven.

From the branches of the acacia, whose delicate leaves and blossom are shown above, gum-arabic exudes; and senna (cassia-leaves) is used as medicine. Peanuts are raised in large quantities on the western coast.

Among the characteristic Egyptian plants is the lotus, a beautiful water-lily, the roots and seeds of which are eaten. The papyrus formerly abounded on the banks of the Nile, and still grows in Abyssinia. It is from this plant that *paper* gets its name, the paper of antiquity having been prepared from its inner bark.

are 5,000 feet high, and its lowest depressions are below sea-level. The Oases, which are the only habitable parts, are in the depressions on the borders and around the mountains. The Lake Region is a plateau, parts of which are 4,500 feet high. The Northern and the Southern Interior Basins are, respectively, 1,000 and 3,000 feet high. The Western Saharan Depression at its lowest points is only twenty or twenty-five feet above sea-level. The Chotts Region, the Hawash Basin, and some oases in Northern Egypt are below sea-level.

Drainage.—The principal rivers are the Nile (the longest river in the world), the Congo, the Niger, the Zambesi, the Senegal, and the Orange. The Nile Basin ranks next to the Amazon Basin in size. Below the

ANIMALS OF AFRICA.

mouth of the Atbara, 1,700 miles from the sea, the Nile has not a single tributary. Its head-waters are all within the region of abundant periodical rains. In June, July, and August the tributaries are flooded, and descend in torrents to the main stream, inundating Egypt; in October, when the waters subside, the rich alluvial soil washed down from the tropical highlands, and deposited upon the banks of the Nile, is ready for the work of the sower. Without the Nile and its overflow, Egypt would be a desert. The Congo, the Niger, and the Zambesi are among the largest rivers in the world. Each of them drains a territory larger than any river-basin in Europe. The Congo is said to discharge into the Atlantic Ocean three times as much water as the Mississippi. The largest lakes in Africa are Victoria Nyanza, Albert Nyanza, and Albert Edward Nyanza (sources of the Nile), Lakes Tchad, Tanganyika, Nyassa, Mcero, Bangweolo, Tzana (Dembea), and Ngami. Victoria Nyanza is, with the exception of Lake Superior, the largest fresh-water lake in the world. Lake Tchad has no known outlet, although it is a fresh-water lake. Lake Tanganyika flows into the Congo through the Lukuga River. Lake Nyassa was discovered by Dr. Livingstone in 1859. Lake Tzana, on the Abyssinian Plateau, at the head of the Blue Nile, is the highest lake, and Lake Tchad is the lowest.

Climate.—Africa is the hottest and driest of the Grand Divisions. The climate of the coast regions is, in general, unhealthful. In the country between 15° N. and 20° S. latitude, there are copious rains during six months in the year. The rest of Africa is rainless, except on the Mediterranean shores, on the mountains, and in areas supplied with moisture by ocean-breezes. Snow seldom falls on the lowlands. The Sahara is the largest rainless region of the globe. The north-east winds that blow over it have left their moisture on the highlands of Asia, and the winds from the Indian Ocean have left their moisture on the Abyssinian Plateau. The absence of vapour contributes to extremes of temperature, and a day of intense heat in the desert may be followed by a night whose temperature is at the freezing-point. Hot, parching winds from the Sahara prevail, at times, in Egypt, Guinea, and Southern Europe.

Productions and *Animals*.—In the region of periodical rains, Africa has a luxuriant vegetation. The more noted trees are the baobab, the acacia, the date-palm, the sago-palm, the oil-palm, the mangrove, the tamarind, and a species of bread-fruit tree. Evergreen oaks, pines, myrtles, and laurels grow in the North. Ebony is an important product of Madagascar and the Portuguese Possessions. Coffee is a native of Abyssinia. The "travellers' tree," whose stalks yield water pure enough to drink, is peculiar to Madagascar. The papyrus and the lotus belong to the Nile. The banana, the yam, and the manioc are among the valuable food-plants. Rice, wheat, maize, and barley grow abundantly in Egypt and other countries. Figs, oranges, grapes, and wine; grain, dates, and almonds; coffee, sugar, and molasses; olives, and olive-oil; spices, palm-oil, gums, wax, tobacco, indigo, and other dyes; senna, myrrh, and aloes; wool, skins, leather, ivory, tortoise-shell, and ostrich-feathers; cotton, hemp, and flax; and gold-dust and diamonds are the chief exports. Copper, iron, lead, and salt are widely diffused. Coal is found in the extreme South. Among the animals peculiar to Africa are the African elephant, the hippopotamus, the African rhinoceros, the giraffe, the zebra, and the quagga; the mandrill, the gorilla, and the chimpanzee; and the gazelle, the gnu, and other antelopes. Other native animals are the lion, the jackal, the hyena, the leopard, and the panther; the zebu, the camel, and the buffalo; the crocodile and the python; the ostrich, the secretary-bird, the ibis, and the guinea-fowl; monkeys and apes of great variety; and goats of peculiarly valuable kinds. For more than four thousand years, camels have been almost the sole means employed to carry merchandise across the deserts. The camel will carry a load of four or five hundred pounds weight, fifty miles a day, for five or six days, although he may not be supplied with food or water during that time. Vast herds of cattle and flocks of sheep are raised in Southern Africa.

Inhabitants.—The population of Africa is over 200,000,000; less than two-thirds of the population of Europe. The people belong chiefly to two races—the Ethiopian and the Caucasian. The negroes—who constitute four-fifths of the population—live in the central and the southern parts. The white race occupy Northern Africa, the Sahara, Abyssinia, and settlements on the coasts. The inhabitants of Madagascar are Malays. Mohammedanism is the prevailing religion of the white people of the North. In Abyssinia, and in the European colonies, Christianity is the prevailing religion. The negroes, in general, are pagans or fetish worshippers.

POLITICAL DIVISIONS.

For convenience of description, Africa may be divided into Northern, Eastern, Southern, Western, and Central Africa.

NORTHERN AFRICA.

NORTHERN AFRICA comprises Marocco, Algeria, Tunis, and Tripoli; the Sahara; and the Nile Countries. The most important food-plants in this region are millet and the date-palm tree. The southern part of Algeria is called Beled-el-Jerid ("Land of Dates"). Rice, wheat, tobacco, sugar, and cotton are raised in Egypt. Grain, olive-oil, dates, almonds, wax, and leather are the chief exports.

MAROCCO is an independent empire. ALGERIA and TUNIS belong to France. TRIPOLI is nominally subject to Turkey. FEZZAN is tributary to Tripoli. The inhabitants carry on an extensive trade with the negro tribes south of the Great Desert, and they export wool, goat-skins, leather, olive-oil, and various fruits. Fez, Mequinez, Marocco, Algiers, and Tunis are the chief cities.

The Sahara consists largely of sandy and stony tracts, but contains many oases, or fertile spots. Although it can only be crossed by the aid of camels, an extensive caravan trade is carried on between the interior and the sea-port towns. The numerous inhabitants of the oases dwell in walled towns and cultivate extensive plantations. The people in the western portion of the desert are Moors, in the central portion Tuaricks, and in the eastern Tibboos. The Tuaricks frequently plunder the caravans. The Tibboos are not a nomadic race, but cultivate the soil and tend their flocks. Salt is found in the desert in large quantities.

The Nile Countries are Egypt, Nubia, Kordofan, Darfur, and Abyssinia.

EGYPT.—The greater part of Egypt is a desert. Along the lower course of the Nile, only the narrow valley, which is annually inundated, is capable of producing crops. Since the completion of the Suez Canal, rapid progress has been made in developing the agricultural and commercial interests of Egypt. The commercial importance of Egypt is due partly to the fact that the Suez Canal is situated in Egyptian territory, and partly to the heavy indebtedness of the Egyptian government to English and French capitalists. In order to secure these from loss, the financial management of Egyptian affairs has been assumed by agents of the British government.

Railways have been built, and, by means of irrigating canals, extensive tracts of desert land have been made productive. Most of the wealthier classes have been educated in Europe, and foreign customs are being introduced throughout the country. The fellaheen, or labouring classes, are greatly oppressed, and are practically in a state of slavery. The Arab inhabitants are Mohammedans; the Copts, Christians. From the remotest times in the history of Egypt, the lot of the fellaheen has been a hard one, and it has been the common custom for the ruler of Egypt to collect them in gangs and compel them to labour on the public works. For this work, not only do they receive no pay, but they are also required to provide their own food, in the meantime. The conscription of fellaheen to-day differs in no wise from that practised under the task-masters 4,000 years ago. In order to escape this conscription, villages and towns are often entirely abandoned, the people fleeing in all directions on the approach of the overseers. The Copts are the descendants of the ancient Egyptians.

The principal products of Egypt are cotton, grain, sugar, and rice. Gum arabic, ivory, indigo, and ostrich feathers are obtained in the Soudan. Manufactories have been established in the larger cities and towns.

Cairo, the capital of Egypt, is the largest city in Africa. Alexandria is the principal sea-port. Railways connect both cities with Suez, the southern seaport of the Suez

THE SUEZ CANAL.

Canal. The northern or Mediterranean seaport of the canal is Port Said. The other seaports of Egypt are Rosetta and Damietta.

Egyptian Soudan is inhabited by warlike tribes of Arab and Negro descent. The Egyptian Soudan was recently annexed by Ismail Pasha, who was, at that time, Khedive of Egypt. The annexation was resisted by the native tribes of the Soudan, and especially by the slave-dealers. For a long time, Egyptian rule was upheld by British bayonets. Finally, Mohammed Achmet, a man renowned for learning and religious zeal, proclaimed himself Al Mahdi, or the Prophet. The fellaheen quickly gathered to his standard, and every army sent to subdue him was annihilated. Recognising the impossibility of holding the Soudan, the British government sent General Gordon to rescue the English subjects who were then in that region. Gordon and these people were finally surrounded at Khartoum and massacred, it is said, by order of the Mahdi. Khartoum, at the junction of the Blue and the White Nile, is the centre of a large caravan trade.

Nubia, Kordofan, Darfur, and the country near the White Nile, are nominally subject to Egypt, but have, for some time, been engaged in a great religious rebellion against that power. Although it rarely or never rains in Middle or Lower Egypt, the land is watered by the annual overflow of the river Nile, making the country extremely fertile. Alexandria is the chief sea-port of Egypt. Cairo, the capital, is the largest city in Africa. Khartoum is the only city of any considerable size in Nubia.

Abyssinia consisted until lately of three separate States; they are now united under the government of a Negus or emperor. Gondar is the capital of Abyssinia. Most of the people profess the Christian religion, but their faith is obscured by many barbarous and superstitious ceremonies.

EASTERN AFRICA.

Eastern Africa includes the countries upon the coast, from the Strait of Bab-el-Mandeb to the Tropic of Capricorn. The principal divisions are Zanzibar and Mozambique. The country north of Zanzibar is occupied by a people called the Somalies. Zanzibar is a native sultanate, and occupies a narrow strip along the coast. Zanzibar City, on the island of Zanzibar, is the seat of government. West of Zanzibar are the German and the British East African colonies. The Coast of Mozambique, the Zambesi Valley, and Sofala belong to Portugal.

SOUTHERN AFRICA.

Southern Africa comprises Cape Colony, Natal, Caffraria, Zululand, Basutoland, and Griqualand, which are British possessions; the South African Republic and Orange Free State, also Bechuanaland, which is under the protection of Great Britain. The South African Republic and Orange Free State are inhabited by negro tribes and Dutch boers, or farmers; the latter being the ruling class. The Western Coast, including Namaqua and Damara Lands, belongs to Germany.

Cape Colony is the most important division of Southern Africa. About one-half of the inhabitants are Dutch and English. Cape Town, the chief city, carries on an extensive trade with Great Britain and other foreign countries. Wool is the principal article of export.

WESTERN AFRICA.

Western Africa includes the countries along the coast, from the Great Desert to the Tropic of Capricorn. Senegambia and Guinea are the principal divisions. The British, Germans, French, and Portuguese have settlements on this coast. The most important one is the British colony of Sierra Leone, which was founded in 1787 as a refuge for liberated slaves. Free Town is the chief town. Liberia is a negro republic, with a government modelled after that of the United States. It was founded in 1821 by the American Colonisation Society as a place of refuge for free blacks and liberated slaves. Monrovia, the capital and chief town, is a place of considerable trade, and contains many schools and churches.

In Guinea, Ashantee, Dahomey, and Yoruba are the most important native kingdoms. The army of Dahomey is composed chiefly of women. The Gaboon and Ogowe regions, near the equator, belong to France.

CENTRAL AFRICA.

Central Africa comprises Soudan, the Congo Free State, and the rest of the plateau as far as Southern Africa. Soudan is a plain of great fertility, and embraces the basin of Lake Tchad and the greater part of that of the river Niger. It is well peopled by various tribes and nations, consisting principally of Moors, Berbers, and negroes. The people, as a whole, are superior to the inhabitants of the coast. Some of them work skilfully in gold, iron, and leather, and weave and dye substantial cotton fabrics. South of Soudan the country was, until recently, but little known, and some of it is still unexplored. In 1876 and '77, Henry M. Stanley made a long and perilous journey across Africa, through almost impenetrable forests, exposed to continual attacks from hostile natives. After exploring Lake Tanganyika, he followed the course of the Lualaba River from Nyangwe to the Atlantic Ocean, finding it to be the main stream of the Congo. This important discovery, and the previous explorations south of Nyangwe, by Commander Cameron, prove that the source of the Congo is Lake Bangweolo, or Bemba.

Congo Free State.—These discoveries led Leopold II., King of Belgium, to organise the International Association of the Congo; and the services of Stanley were secured to execute the plans of the Association. His triumph over the dangers encountered, and the successful establishment of stations along the river, resulted in the formation of the Congo Free State, which has a civilised government and is pledged to free trade, freedom of religion, and the suppression of the slave trade. Freedom of navigation and commerce was established in the basin of the Congo. All flags, without distinction, have free access to the coast, and no duties are to be imposed on imported wares save such as are necessary to meet needed expenditures in the interest of trade. All the Powers having vested interests in the Congo Free State pledge themselves to watch over the welfare of the native tribes. The Conference adopted a clause providing that the freedom of imports may be revoked at the end of twenty years, if desired or thought requisite. Products.—The chief commercial product of the Upper Congo at present is ivory, and Mr. Stanley believes that it will take many generations to exhaust the supply. The banks of the Middle and Upper Congo are lined with groves of the oil-palm. The orchilla-weed is found everywhere. The wild coffee-plant, which is equally abundant, yields excellent berries. In some districts india-rubber can be obtained in unlimited quantities. Ground camwood and nutmegs are common products. Gum-copal can also be supplied in large quantities. In the lake-region there are rich iron and copper mines and gold and silver deposits. Bananas, oranges, and other fruits have been cultivated by settlers on the Lower Congo. Some of the timber of the Congo region is valuable enough to repay the costliest transportation. There are also precious spices and gums. The Upper Congo region, particularly the elevated country between the Congo and the lakes, is described as a promising field for colonisation. The climate there is salubrious and temperate. The rich river-valleys and old lake-bottoms yield wonderful crops of rice and grain. There are pastoral plains, which are covered with the herds of flourishing native communities. Area.—The area of the Congo Basin proper was thus divided by the Berlin Conference :—

	Sq. miles.
French Territory	62,400
Portuguese Territory . . .	30,700
Unclaimed	349,700
Free State of the Congo . .	1,065,200
	1,508,000

The total area of the Congo Free State is 2,400,000 square miles, of which France possesses 257,000 square miles, Portugal, 741,343 square miles, and Great Britain 5,056,000 acres. In 1887, Stanley undertook another journey across the continent for the purpose of rescuing Emin Pasha, a noted explorer, who was supposed to be held a prisoner by the inhabitants of the Upper Nile region. Starting from the mouth of the Congo River with a numerous force, but little intelligence concerning him reached the civilised world until the latter part of 1889, when he appeared on the eastern coast, near Zanzibar, having accomplished the object of his journey and made many important geographical discoveries. Savage and powerful animals, such as the lion, elephant, rhinoceros, hippopotamus, and the gorilla, a gigantic species of ape, abound in this portion of Africa.

THE AFRICAN ISLANDS.

Madagascar, the largest island of Africa, is a mountainous but fertile kingdom. Antananarivo is the capital and largest city, and Tamatave is the most important seaport. Réunion and Mauritius Islands are east of Madagascar. The former belongs to France, the latter, to England. The Amirante and Seychelle Islands are dependencies of Mauritius. Socotra belongs to England. The Azores, Madeira, and Cape Verd Islands belong to Portugal; the Canaries, to Spain. Fruit, sugar, coffee, cochineal, and salt are the chief exports. St. Helena and Ascension are British islands. The former is noted as having been the place of exile of the Emperor Napoleon, who died there in 1821.

OCEANIA.

See Map, page 541.

Oceania lies in the Torrid and South Temperate Zones. It extends from 50° S. to 30° N. latitude, and from 100° W. to 90° E. longitude. It is bounded on the south by the Indian Ocean, on the west by the China Sea, and embraces nearly the whole of the Pacific Ocean, both north and south of the Equator.

Size.—Of the 50,000,000 square miles included within these boundaries, the land area is only about 4,000,000.

Outline and Surface.—Oceania consists entirely of islands, divided physically into three sections—the western, the central, and the eastern. The western section includes the greater part of the Sunda Islands (Sumatra, Java, etc.) and Borneo. According to Javanese records, Sumatra, Java, and Bali formerly constituted a single island. They were severed from one another by earthquakes and volcanic outbursts. In

1883, there was a terrific explosion in Krakatu, or Krakatoa, an island in the Strait of Sunda. A part of Java was involved in that convulsion, and more than 100,000 people perished. Borneo, in the northern part of this section, is traversed from north-east to south-west by the Seribu Mountains, a central chain rising from a table-land having an average elevation of 600 feet. The Sunda Islands, forming the southern portion of this section, are only a partially-submerged mountain-chain, rising from 4,000 to 12,000 feet above the sea-level. The central section is the largest of the three, and comprises Australia, New Zealand, Papua, Celebes (and the Spice Islands), and the Philippines. These islands consist in general of table-lands, having an average elevation of from 500 to 1,000 feet, and crossed by or bordered by low mountain ridges, except in Papua and New Zealand, where some high chains are found. The eastern section includes several thousand small islands scattered throughout the Pacific Ocean. Some of these islands are mountainous and are of volcanic origin, but the greater part are *atolls*, or islands of coral formation. The most important groups are the Sandwich or Hawaiian Islands, Tahiti (Society Islands), the Samoan and the Feejee Islands.

Drainage.—Australia is the only island having a large river-basin. There are also some salt, marshy lake-basins in the interior of this island.

Climate.—The climate of Oceania is variable, generally healthful, but very hot in the western and central sections. The year is divided into two seasons—the wet and the dry. Thunder-storms, waterspouts, and typhoons are of common occurrence. In the eastern section the peculiar distribution of small areas of land throughout the vast expanse of water affects the climate, which is comparatively moderate and salubrious.

Productions and Animals.—The rice region marks an important variation in the vegetable and animal life of Oceania. The islands of Malaysia, lying west of the line marking the limit of rice, and included within the territory bounded by it, have all the Asiatic plants and animals, together with some additional species. Among the most important vegetable productions are rice—the principal food of the natives—coffee, sugar, cotton, raw silk, tobacco, the sago-palm, and all the spices and tropical fruits. The orang-outang, elephant, rhinoceros, hippopotamus, tiger, leopard, panther, buffalo, crocodile, numerous monkeys, and many species of insects, reptiles, and beautiful birds, are found here. It is estimated that Australia contains nearly seven thousand species of plants not found elsewhere. The eucalyptus, or gum-tree, is an evergreen. The young tree has leaves which are nearly circular. Each leaf is pierced by a square stem. Subsequently, the stem becomes round, and the leaf long and narrow, hanging with its point downward, and its edge turned to the sun. The blue gum-tree attains a height of from 200 to 300 feet. The foliage has a spicy aroma. The eucalyptus is now cultivated extensively on the Pacific Coast, in the Valley of the Nile, and elsewhere. The great islands lying east and south of the preceding region are remarkable for forms of vegetable and animal life found only in this part of the world. Wheat, maize, the vine, sugar, cotton, and fruits grow to perfection, but they are not natives of this region. Australia has no large mammals, but produces some species of small size and a great variety of marsupials. The cattle, the sheep, and all the domestic animals were originally introduced by the white settlers. The young of marsupials, or pouched animals, are carried in the pouch of the mother until they are able to feed and take care of themselves. Even after they

SYDNEY HARBOUR.

are partly grown, if frightened, or assailed, by enemies, they take refuge in the mother's pouch. The kangaroo, of which there are many species, has short fore legs. By means of the hind legs, which are very long, it can leap fifteen or twenty feet. Its flesh is used for food, and its skin is valuable for leather. The ornithorhynchus, platypus, or duck-bill, has a bill like that of a duck, and a body like that of an otter. It lives equally well on land or in water. Its fore feet are armed with claws, and its hinder ones are webbed like those of water fowl. The emu, or Australian ostrich, is smaller than that of Africa, or of South America. Some of the animals of Tasmania, of which the dog-headed wolf is the largest, are similar to those of Australia. The Polynesian Islands present a great variety of palm trees. The banana and bread-fruit trees are the most important. Potatoes, maize, cotton, etc., are abundant. The cattle in these islands are of foreign origin, as in Australia.

Minerals.—This part of the world is one of the richest in minerals. Diamonds are found in Borneo, and gold is abundant in Australia and Malaysia. The latter division is especially rich in tin, coal, iron, copper, quicksilver, etc., but the mines are not much worked.

Inhabitants.—The population of Oceania is estimated at 40,000,000 to 45,000,000. This population is composed of descendants of the European settlers (white), Malays (brown), and Australians or Papuans (black). The latter are among the lowest representatives of the human race.

GENERAL DIVISIONS.

Oceania consists entirely of islands, which belong to the following divisions: Malaysia, Australasia, and Polynesia.

MALAYSIA.

Malaysia.—Sometimes called the Eastern or Malay Archipelago, and is peopled chiefly by the Malay race. It is divided into four groups,—the Philippine Islands, the Borneo Group, the Celebes Group (including the Spice Islands), and the Sunda Islands. This Archipelago lies in the Torrid Zone, under or near the Equator, which passes through Sumatra, Borneo, Celebes, and Gilolo. The principal entrances to Malaysia from the south are by way of Sunda and Bally Straits, and through the Strait of Malacca (commonly called "The Straits") from the west.

Climate.—The climate, especially in the central groups, is very hot. These islands were formerly considered unhealthful, but, except in some small marshy districts, the climate is as salubrious as that of any tropical country, and at the altitude of 500 feet there exists a remarkably healthful region of perpetual spring.

Surface and Vegetable Productions.—No part of the world is richer in its vegetable productions than Malaysia, but these vary with each of the four groups above named. The Sunda Islands are traversed throughout their entire length by a chain of high volcanic peaks covered with dense forests and remarkable for their frequent eruptions. In 1883 more than 100,000 people perished in Java from an earthquake which resulted from the eruption of Krakatoa, a little volcanic island in the Strait of Sunda. Native traditions state that Sumatra, Java, and Bally once constituted a single island, which was torn asunder by earthquakes and volcanic disturbances. The soil is very fertile. Rice is cultivated in most of the islands. Coffee, cotton, sugar, and indigo are exported in immense quantities. Cochineal, tobacco, and tea are raised with great success. All the tropical fruits grow here luxuriantly. The Celebes group.—The great island of Celebes, with Gilolo and the numerous other islands forming the group called the Spice Islands, lies almost directly under the Equator. The climate is warmer and drier than that of the Sunda Islands. Rice is not so abundant as in the Sunda Islands, and sago supplies its place. The superior quality of spices which are especially characteristic of these islands gives them great importance. The Borneo Group has the same productions as the Spice Islands in the south, but resembles the Celebes Group in the productions of the northern and eastern parts. The Philippine Islands are mountainous and volcanic, and have a luxuriant vegetation combining the productions of Malaysia with some of the characteristic products of China. The soil is very fertile and the climate moist. Rice, sugar, cotton, silk, tobacco, coffee, hemp, some spices, and a great variety of fruits are the principal products. Malaysia is remarkable for its dense forests, containing a great variety of palm trees (some species of which are the largest known), upas, teak (valuable for timber), bamboo, sandal-wood, ebony, etc. It is also noted for the bread-fruit, orange, lemon, mangousteen, mango, banana, cocoanut, melon, etc. Sweet potatoes are also found here. Great quantities of timber, gutta-percha, and camphor are exported from Sumatra and Borneo.

Animals.—The orang-outang is found in Borneo. Some other species of large apes are found in Sumatra. The Asiatic elephant, the one-horned rhinoceros, and the tapir also live in this island. The tiger, leopard, tiger-cat, hippopotamus, a great variety of small-sized monkeys, the wild boar, wild ox, buffalo, deer, babiroussa, numerous insects, and enormous serpents are found in all the islands. The black panther lives in Java, and crocodiles are plentiful in the rivers. Domestic animals, such as hogs, cattle, goats, and sheep, are abundant. The birds are remarkable for the beauty of their plumage.

Minerals.—The mineral resources of Malaysia are very great, but have not been fully developed. Java furnishes only salt, naphtha, asphaltum, and lignite. Sumatra and Borneo are among the richest countries in the world in minerals. Tin, gold, copper, iron, petroleum, lignite, sulphur, and saltpetre are obtained from Sumatra. Banca and Billiton furnish great quantities of tin. Coal is found in Labuan Island. Gold, diamonds, coal, antimony, mercury, etc., exist in Borneo, but the mines are not worked. Good coal, gold, iron, and sulphur are exported from the Philippine Islands.

Inhabitants.—The ruling people of the Archipelago are the Malays. They are much engaged in agricultural pursuits. In the northern part of Borneo, the Sulu Islands, and the southern part of Mindanao many of them are pirates. The population of Malaysia is about 38,000,000. In the interior of the larger islands are tribes of savages, some of whom, in Sumatra, are cannibals. There are also many Chinese and, in the commercial towns, a few Europeans. The greater part of

Malaysia is owned and controlled by the Dutch. Among their possessions are included two-thirds of Sumatra, the southern part of Borneo, Celebes, Gilolo, and the other Spice Islands, the southern part of Timor, Sumbawa, Lombock, Bally, Java, and Madura. Java contains more than half the population of Oceania, and in proportion to its area ranks second among the thickly-populated countries of the world, having 46 inhabitants to the square mile, while Belgium has 52 and the British Isles 30. The Philippine and Sulu Islands belong to Spain. The Portuguese possess the northern part of Timor. Sarawak (Borneo) is controlled and the island of Labuan is owned by the English.

Towns.—Batavia, the capital of the Dutch possessions, Sourabaya, and Samarang, in Java, Benculen and Palembang, in Sumatra, Manilla, the capital of the Spanish possessions, are the most important towns and the chief commercial ports of Malaysia.

AUSTRALASIA.

Australasia is the largest division of Oceania. It comprises Australia, Papua, or New Guinea, Tasmania, New Zealand, New Caledonia, and many other islands of less importance. The natives (except in New Zealand) belong to different varieties of the Papuan family, a negroid ("negro-like") race. Their colour varies from chocolate to black. Many of the tribes are cannibals, and nearly all are savages.

AUSTRALIA. *See Map, page* 541.

the south-west division of Australasia. By some it is strictly defined to be an island,—as, indeed, may be either of the masses of land called the Old and the New Worlds,—while by others it is described as a continent. It is bounded on the west by the Indian Ocean; on the north by Torres Strait; on the east by the Pacific; and on the south by Bass's Strait. In English measure, the greatest breadth from north to south is upwards of 2,000, and the greatest length from east to west nearly 2,600 miles. Of the resulting rectangle of 5,200,000 square miles, Australia comprises more than a half, perhaps four-sevenths, or, in all, 2,944,893 square miles—half the area of Europe, the next larger continent, or ten times that of Papua, as the next smaller island. Among the indentations of the coast the Gulf of Carpentaria, on the north-east the only one of considerable magnitude, penetrates inward about 500 miles from Cape York on the east, and about 400 from Cape Arnhem on the west. This opening is entirely surrounded by tropical regions, rendered suitable for colonisation by the frequent and moderate rains. An alternation of more or less rainless and rainy periods is characteristic of the Australian skies. The rivers undergo a similar alternation of drought and flood, the one state being, within certain limits, almost as destructive as the other. The rivers of the east coast are, in general, toward their mouths, tidal streams flowing between high banks through a comparatively level region. Some of those of Victoria—such as the Glenelg—spring from a moist and undulating tract of country; while most of the others rise among the lofty ranges and snowy peaks of the Australian Alps—the coldest section of the bordering mountains by reason both of their altitude and of their distance from the equator. They are subject to frequent freshets in winter, and are less eccentric than other rivers of Australia in general. In 1844, Sturt penetrated to the centre of the country, between Spencer Gulf on the south and the Gulf of Carpentaria on the north, meeting sterility and drought. In 1847 Leichhardt, encouraged by the success of his previous expedition from Sydney to Port Essington, started from Moreton Bay on the east for western Australia, following a sort of diagonal of nearly the greatest possible length; and, as was to be dreaded, he must have failed in his bold enterprise—for neither of himself nor of his companions has any intelligence ever been received. Subsequent explorations made by Sturt (1858-1862), Burke and Wills (1860-1861), and by expeditions in search of them, have resulted in the discovery that the interior of the Australian continent is, on the whole, well fitted for pastoral, and in many places for agricultural, purposes. Gold was discovered in 1851, and acted as a stimulus to rapid emigration from foreign countries to Australia. So utterly unknown were the mineral treasures of this continent that it was by the merest accident, as was also the case with gold, that the Burra Burra copper mines were discovered in 1842. An extensive coal field has been known for some time as occupying the whole basin of the Hunter River and its tributaries, down to the sea-coast at Newcastle, where several beds crop out on the beach. From Port Hunter the coal is despatched to all parts of Australia, and even to New Zealand and California. Beds belonging to the carboniferous system have been discovered also in Western Australia near Perth. Iron is spread in great confusion over all the continent. To such an extent does it exist in several of the mountains on the north coast that they violently affect the magnetic needle. Lead is most abundant east and south-east from Adelaide at Mount Beevor and near Cape Jervis. Manganese, zinc, quicksilver, and antimony have been met with in South Australia, as also good specimens of jasper, chalcedony, and opal. Zinc and quicksilver are mentioned as occurring in Western Australia.

The natural history of Australia is different from that of any other quarter of the globe. Its trees, which seldom form dense forests, are scattered as in a lawn or park, where the colonist finds pasture for his flocks without any previous clearing. Few of the trees and shrubs of Australia produce edible fruits, and those known as Tasmanian currants, Tasmanian cranberries, etc., are not of much value. The seeds of the araucarias are edible, having some resemblance to almonds. Almost none of the native vegetable productions of Australia have been found worthy of the care of the gardener, except as objects of beauty. The zoology of Australia is particularly characterised by the prevalence of marsupial quadrupeds, of which comparatively few exist in any other part of the world. Some of them are herbivorous, as the kangaroos, potoroos, and wombats; some feed indifferently on roots and insects, as the bandicoots; some are carnivorous, as the thylacine and the dasyure—the tiger and wild cat of the colonists—but all are marsupial; that is, the females have a pouch for the young, which are born in a much less advanced state than the young of other viviparous animals. Many of the birds of Australia are very beautiful, but they do not exhibit peculiarities so general and so striking as its quadrupeds or even its plants. In 1606 the north coast was descried by the Dutch on board of the *Duyfen*, and about the same time by a Spanish expedition sent from Peru in 1605, one of the commanders of which gave his name to Torres Strait. It is probable, however, that Australia had been long known to the Chinese. In 1619 and 1622 respectively the west and south-west coasts were seen. In 1642 the island, called for some time Van Dieman's Land, but now Tasmania, was visited by Tasman, who within a month visited New Zealand. In 1697 Swan River was discovered by Vlaming. In 1770 Cook, then on his first voyage, explored nearly the whole of the east coast, designating the same New South Wales. In 1798, Bass, a surgeon in the navy, ascertained the separation of Australia and Tasmania by passing through the strait that bears his name. In 1802 Port Philip was entered; and in the same year Flinders pretty nearly completed the general outline by sailing along the south shore. There was established, in 1788, the settlement of New South Wales, and from this all the other British Australian settlements, with the exception of Swan River, have successfully been planted. The other colonies, whether offshoots or not of New South Wales, assumed an independent existence at various times from 1825 to 1859.

NEW SOUTH WALES,

a British colony in the south-east of Australia, originally comprised all the Australian settlements east of the one hundred and thirty-fifth meridian, but the formation, successively, of the separate colonies of South Australia (1836), Victoria (1851), and Queensland (1859), has reduced it to more moderate dimensions. It is now bounded on the north by a line which, beginning at Point Danger, follows several lines of heights across the Dividing Range till it meets the twenty-ninth parallel, which forms the rest of the boundary westward; on the west by the one hundred and forty-first meridian; on the east by the Pacific Ocean; and the line separating it from Victoria on the south runs from Cape Howe, at the south-east of the island, north-west to the source of the Murray, and then along that stream, in a direction west by north, to the west boundary of the two colonies. Area 309,175 square miles. New South Wales is self-governed, with a governor appointed by the Queen, a responsible ministry, a legislative council nominated by the Crown, and a house of assembly elected by permanent residents. On January 1st, 1880, there were 1,089 regular places of worship. The capital is Sydney; and the other chief towns are Paramatta, Bathurst, Goulburn, Maitland, Newcastle, Grafton, and Armidale, with a population ranging from 3,000 to 17,000.

SYDNEY, capital of New South Wales, and the oldest city in Australia, situated on the south shores of Port Jackson. Situated about 8 miles from the sea, the whole circumference of the bay round which the city is built forms a series of natural wharves. Several of the modern streets, from their breadth and the size and style of the buildings, are not behind those of the principal cities of Europe. The climate of Sydney is temperate and healthy. The most important edifice, not only in Sydney, but in the whole of the Australian settlements, is the university, which stands on a commanding height.

VICTORIA

comprises the south-east corner of Australia, at that part where its territory projects farthest into the south latitude. The extreme length is east and west, and is about 480 miles, by an extreme width north and south of 250 miles. But a remarkable indentation of both the north and south boundary opposite each other, about the middle of the colony, reduces the breadth between the head of the Port Philip inlet and the Murray to only 120 miles. The area is 87,884 square miles. Victoria is divided into four districts and thirty-seven counties, the principal counties being Bourke, Talbot, and Grant. Victoria is traversed its entire length from east to west by a chain of mountains, completely dividing it into two parts, and known as the Dividing Range. The summit of this range runs generally at a distance of 60 or 70 miles from the coast. The streams to the north of it flow towards the River Murray, and those to the south of it towards the sea. Victoria contains numerous salt and fresh-water lakes and lagoons. Some of them are craters of extinct volcanoes. Lake Corangamite, the largest, covers 57,700 acres, and is quite salt. It has no visible outlet. Lake Colac, a few miles distant from Lake Corangamite, covers 6,650 acres, and is quite fresh. Lake Burrumbeet is also a fine sheet of fresh water, embracing 5,200 acres. Within a comparatively limited area Victoria possesses the climatic advantages of the more favoured portions of Southern Europe. Upon examining a chart showing isothermal lines, it will be found that Melbourne is situated upon or near the line corresponding with that on which Marseilles, Bordeaux, Bologna, Nice, Verona, and Madrid are situated. The difference, however, between summer and winter, and the hottest and coldest month, is far less in Melbourne than in any of these places. The gold deposits of Victoria are of world-wide fame. Although many of the old goldfields have become exhausted, the yield of some of the quartz reefs which have been worked for long periods continues undiminished, and fresh discoveries are being continually made. Besides gold, the metals which have been mined for in Victoria are tin, copper, antimony, silver, iron, and lead. None of these, however, have been found in sufficient quantity to warrant mining operations being pursued persistently. Coal exists in several localities and extends over a large area of country. Lignite exists in large beds, one at Lal Lal has been worked for some years, the lignite being used not only for fuel but for deodorising purposes. Kaolin of a superior quality, and quite suitable for the manufacture of porcelain, has been worked to some extent; and small quantities of gypsum and magnesite have been also raised. Quarries from which a hard and durable description of basalt, locally called bluestone, is raised, are worked to a large extent, as also to a less extent are quaries of slate, flagging, sandstone, freestone, limestone, and granite.

MELBOURNE, the capital of Victoria, contains many fine buildings and churches. Perhaps nothing gives stronger testimony to the wealth and enterprise of the inhabitants of Melbourne than the rapidity with which so many noble institutions as adorn the city have sprung up among them. Among these is the university, with an annual endowment from the state of £9,000, and possessing valuable scholarships and exhibitions. It is a large building, and is surrounded by extensive grounds. It was opened in 1855, and has a respectable staff of professors, with a considerable attendance of students in arts, law, engineering, etc. The post office, a magnificent structure, in the Italian style, elaborately ornamented with sculpture, and having one of its façades surmounted by four towers, was built in 1859. The Parliament Houses were erected in 1855, at a cost of £400,000.

SOUTH AUSTRALIA,

a British colony founded by the South Australian Company in 1834. Legislation has rendered this name a misnomer, by extending the boundaries of the colony so as to include the entire centre of the Australian continent, comprised between the Southern and the Indian Oceans, and between 129° and 141° of east longitude, an area of 903,690 square miles. The north portion of this vast territory is watered by numerous streams and rivers, some of them, as the Victoria and the Adelaide, navigable for a considerable distance by ships of burden. The soil is fertile, and suitable for the cultivation of tropical productions of every description. The great central region is suited for pastoral purposes. The surface of the country alternates between open plains and wooded ranges of moderate elevation, which enclose many beautiful and fertile valleys. The principal ranges are the Flinders range and the Mount Lofty range, running nearly parallel with Gulf St. Vincent. The principal harbours are Port Adelaide in St. Vincent's Gulf, Port Lincoln and Port Augusta in Spencer Gulf, Victor Harbour and Port Macdonnell on the south coast, and Nepean Bay in Kangaroo Island. The mineral wealth of South Australia is great, the principal metals being copper, lead and iron. The climate is healthy, and remarkably free from epidemic diseases. The hottest months are December, January, February and March. The constitution of South Australia vests the legislative power in a Parliament consisting of a Legislative Council and a House of Assembly, both elective. All churches are placed on a footing of perfect equality. The colony has an extensive system of electric telegraphs. An overland line runs from Adelaide to Port Darwin, across Central Australia, and, through junction with the Anglo-Indian line, connects Australia with all the great centres of civilisation.

Adelaide, the capital of the colony of South Australia, is situated on the Torrens, 7 miles from Port Adelaide, with which it is connected by railway. The first settlement was made in 1836. Its port (Port Adelaide) has a safe and commodious harbour.

QUEENSLAND

occupies the whole of the north-east portion of Australia, commencing about 400 miles north of Sydney, at Point Danger. The east seaboard extends about 1,300 miles to Cape York, the extreme north point of the continent. The breadth of the territory is 900 miles from the east coast line to the west boundary line. This includes the greater portion of the Gulf of Carpentaria, which has a seaboard of about 900 miles. The whole of Queensland comprises 668,224 square miles—nearly twelve times the area of England and Wales. Beyond the "Andes," or great dividing range, the country presents features of still greater beauty and fertility. Vast plains stretch out unbroken by a single tree, but covered with luxuriant grass. These plains are composed of rich black soil, and are well watered. The soil in this locality is admirably adapted for tillage; and near the mountain range the rains fall regularly. The land here is lightly timbered, and the soil is proved to be adapted for the growth of wheat of fine quality. The average yield may be estimated at thirty bushels per acre. Indian corn and other cereals as well as all the European fruits, grow luxuriantly. The summer season is hot; but the air is dry, elastic, and healthy, and the sea-breezes temper the heat, and make it perfectly endurable even in the hottest time of the year. The night is almost invariably cool. Ipswich, Rockhampton, Maryborough, Toowoomba, Gayndah, Dalby, and Bowen, are rapidly rising towns. On the lower lands, on the rivers and bays, and on the fertile valleys and sunny slopes of the east side of the range, there are many millions of acres of land available for settlement, and suited for tillage. The land is very productive, yielding two crops in the year, and capable of producing almost everything that can be grown in any part of the world. Great and rapid progress has of late been made in the cultivation of cotton. The mineral resources of Queensland are large. Tin is found in immense quantities. Pearl fishing is also carried on with encouraging results. The chief exports are wool, tallow, gold, copper, cotton, live stock, hides, timber, and provisions. Queensland is a great pastoral country. The Queensland wool is remarkable for the fineness of its quality; and this seems to be increasingly the case as the pastoral occupation of the country extends north. Queensland was erected into a separate and independent colony in December, 1859. The government is vested in a Governor, an Executive Council, and two Houses of Parliament. State aid to religion was abolished by one of the first acts of the parliament. An excellent system of free primary education is in successful and vigorous operation throughout the colony.

Brisbane, is a seaport, and the capital of Queensland. It possesses numbers of fine buildings, among the chief of which are the houses of legislature, which cost £100,000, the post office, and the viceregal lodge.

WESTERN AUSTRALIA.

Formerly the Swan River Settlement, a British colony whose boundaries are defined as that portion of the Australian continent situated to the west of the one hundred and twenty-ninth meridian, and bounded on the other three sides by the Indian Ocean. Area 975,920 square miles. This vast territory is only sparsely populated, although it is the oldest of the British Australian colonies, having been settled in 1829. There are excellent coal deposits, and in the interior the soil is admirably fitted for the culture of the vine, olive, fig, etc. The chief stream is Swan River and its tributaries. The agricultural prosperity of the colony has been greatly on the rise in recent years.

Perth is its capital. It is situated on Swan River, with a large and growing population.

TASMANIA.

Tasmania is a mountainous island lying south-east of Australia, and separated from it by Bass's Strait. It has a mild climate, a fertile soil, and an abundance of timber. Gold, copper, iron, lead, coal, and tin are found here. Wool is the chief export.

Hobart is its capital and principal city; second city, Launceston. The coast is rocky. Fruit grows in surprising abundance, and attains remarkable perfection of quality. Manufactures are growing rapidly in importance. The government was severed from New South Wales in 1825, and received a constitution in 1871. The colony is famous for merino sheep, throughout Australia.

NEW ZEALAND. *See Map, page* 512.

New Zealand consists of two large and several small islands, which lie 1,500 miles south-east of Australia. These islands are elevated, and traversed from north to south by a chain of high volcanic mountains. The country is well wooded, and has a mild, rainy, and equable climate. The exports are gold, flax, wool, and gum. The natives (called Maoris) are of the Malay stock, and are a well-formed, bold, and intelligent race. They were once ferocious cannibals, but by a kind and just treatment they are becoming peaceable and friendly to the whites.

NEW CALEDONIA.

New Caledonia is a mountainous island belonging to France. It is enclosed by coral reefs, is well wooded, and is rich in coal, copper, and tin.

PAPUA OR NEW GUINEA.

Papua or New Guinea is the longest island in the world except Australia. It is nominally possessed by the Dutch, German, and English nations. Little is known about this island. In the south-eastern peninsula is a chain of high mountains. The Fly River drains the southern part of the island. The interior is covered with dense tropical forests and inhabited by numerous tribes of savages. Papua is remarkable for the great variety and beauty of its birds. The bird of paradise is found only in this island and in Australia. The name Melanesia—meaning "Islands of the Blacks"—is applied to Papua and the islands east of the Coral Sea.

POLYNESIA.

The principal groups of Polynesia are the Sandwich (or Hawaiian), Ladrone (or Mariana), Caroline, Society (Tahiti), Marquesas, Samoan, and Feejee Islands.

Climate and Productions.—Nearly the whole of Polynesia is in the Torrid Zone, but, modified by the ocean-breezes, the climate is mild and delightful, though unhealthful for Europeans. The Sandwich Islands are high and volcanic, and the most important group of Polynesia. Hawaii, the largest island, contains Mount Mauna Kea, the highest peak of Oceania. Oranges, pine-apples, plantains, and bananas, the yam, the bread-fruit, and the cocoa-nut, grow abundantly in the volcanic islands. Cotton and the sugar-cane are raised in some of the islands. Most of the coral islands are atolls—that is, narrow strips of land rising but a few feet out of the water and enclosing a lagoon. They have a scanty vegetation, because, having no highlands to condense the rain-clouds, they are subject to droughts. When first discovered, these islands contained no animal larger than a hog; but many of the domestic animals of Europe have been taken to Polynesia by white settlers. Birds and insects are numerous.

Inhabitants.—The Polynesians are akin to the Malays. They are a tall, finely-formed race. In the Sandwich Islands they have been converted to Christianity. The native inhabitants of the islands of Oceania, especially those of the Hawaiian Kingdom, are rapidly passing away before the white man, and, like the Indians of North America, will doubtless at no distant day become extinct.

Towns.—Honolulu, on Oahu, one of the Sandwich Islands, is the only important town in Polynesia. The Marquesas Group and Tahiti are owned by the French. The Ladrone and the Caroline Islands belong to Spain, and the Samoan Islands are under the protection of the United States.

GEOGRAPHICAL AND STATISTICAL TABLES.

AREAS OF THE PRINCIPAL ISLANDS.

America.

	Sq. miles.		Sq. miles.
Greenland	830,000	Marajo	5,160
Cuba	43,220	Jamaica	4,193
Iceland	40,470	Chiloe	3,980
Newfoundland	40,280	Puerto Rico	3,597
Hayti	29,830	Trinidad	1,754
Vancouver	18,937		

Europe.

	Sq. miles.		Sq. miles.
England, Scotland, and Wales	84,017	Sicily	9,920
Ireland	32,541	Sardinia	9,201
		Corsica	3,378

Asia.

	Sq. miles.		Sq. miles.
Nippon or Hondo	86,802	Hainan	13,951
Saghalin	47,500	Formosa	13,867
Yeso	32,944	Kiushiu	11,288
Ceylon	24,702	Shikoku	7,034

Africa.

	Sq. miles.
Madagascar (with surrounding islands)	228,645
Teneriffe	880

Oceania.

Australia (with Melville, Frazer, and Kangaroo Islands)	2,944,627
Borneo	278,100
Papua	223,100
Sumatra	181,752
Celebes	71,791
Luzon	57,705
New Zealand — North Island	44,736
New Zealand — South Island	56,224
Java	45,894
Mindanao	35,900
Tasmania	25,375
Timor	21,840
New Caledonia	6,775
Hawaii	4,382
Tahiti	1,017

HEIGHTS OF THE PRINCIPAL MOUNTAINS.

(*V.* = *Volcano.*)

EUROPE.

	Feet.
Elbruz, Caucasus Mountains	18,493
Kasbeck, Caucasus Mountains	16,540
Mont Blanc, Alps Mountains	15,811
Monte Rosa, Alps Mountains	15,208
Finster-Aarhorn, Alps Mountains	14,026
Gross-Glockner, Alps Mountains	13,100
Mulahacen, Sierra Nevada, Spain	11,658
Pic de Nethou or Maladetta, Pyrenees Mountains	11,168
Etna, Sicily, V.	10,674
Gran Sasso d'Italia, Apennine Mountains	10,154
Mount Olympos, Balkan Peninsula	9,754
Maunt Tatra, Carpathian Mountains	8,779
Ymesfield, Scandinavian Alps	8,670
Mount Negoi, Transylvanian Alps	8,480
The Psiloriti (Ida), Candia	8,060
Snœhaetten, Scandinavian Alps	7,549
Mount D'Or, Central Plateau, France	6,188
Iremel, Ural Mountains	5,075
Hekla, Iceland, V.	5,110
Ben Nevis, Grampian Mountains	4,368
Vesuvius, Italy, V.	3,948
Stromboli, Lipari Islands, V.	2,957

NORTH AMERICA.

	Feet.
Mount St. Elias, Alaska	19,500
Mount Wrangel, Alaska, V.	? 19,000
Orizaba, Mexico, V.	17,879
Popocatepetl, Mexico, V.	17,784
Mount Hooker, British North America	? 16,750
Iztaccihuatl, Mexico, V.	15,708
Mount Whitney, California	14,898
Mount Fairweather, Alaska	14,708
Mount Rainier, Washington	14,444
Mount Shasta, California, V.	14,442
Long's Peak, Colorado	14,271
Uncompahgre Peak, Colorado	14,235
Pike's Peak, Colorado	14,147
Mount Brewer, California	13,880
Fuego, Guatemala, V.	13,800
Agua, Guatemala, V.	13,758
Spanish Peaks, Colorado	13,620
Fremont's Peak, Wyoming	13,570
Mount Hayden, Utah	13,500
Colima, Mexico, V.	12,750
Ilyanna, Alaska, V.	12,060
Mount Hood, Oregon	11,225
Mount St. Helen's, Washington, V.	9,750
Mount St. John's, California	8,000
Mount Victoria, Vancouver Island	7,434
Black Dome or Mount Mitchell (highest peak), North Carolina	6,668
Clingman's Dome, North Carolina and Tenessee	6,660
Mount Washington, New Hampshire	6,288
Mount Katahdin, Maine	6,200
Mount Marcy, New York	5,403
Mount Mansfield, Vermont	4,430
Jorullo, Mexico, V.	4,265
Mount Forbes, British North America	5,451

SOUTH AMERICA.

	Feet.
Aconcagua, Chili, V.	23,869
Nevado de Sorata, Bolivia	23,281
Nevado d'Illimani, Bolivia	21,150
Nevado d'Illampu, Bolivia	21,043
Sahama, Peru	20,970
Llullailaco, Chili	20,800
Chimborazo, Ecuador, V.	20,696
Arequipa, Peru, V.	20,320
Supaiwasi or Huaina Potosi, Bolivia	20,163
Cotopaxi, Ecuador, V.	19,522
Cayambe-Urcu, Ecuador, V.	19,240
Antisana, Ecuador, V.	18,846
Tolima, Columbia, V.	18,476
Pichincha, Ecuador, V.	15,640
Itatiaia-Assu, Brazil	10,040

ASIA.

Highest peaks in the world.	Mt. Everest or Gaurisankar, Himalaya Mts.	29,002
	Kunchinginga, Himalaya Mountains	28,158
	Dhawalagiri, Himalaya Mountains	28,000
	Mount Dapsang, Karakorum Mountains	27,200
	Hindu Kush, Afghanistan, several peaks 18,000 to	20,000
	Demavend or Elboorz, Persia, V.	18,846
	Tengri-Shan, Thian-Shan Mountains	18,586
	Ararat, Turkey	17,260
	Bieluca, Altai Mountains	12,790
	Mount Fuji or Fusipama, Japan, V.	12,450
	Dhor el Khodib, Lebanon	10,061
	Sinai, Arabia	9,304
	Adam's Peak, Ceylon	7,420

AFRICA.

Kilima-Njaro, Eastern Africa	18,709
Ruwenzori	18,000
Wosho, Plateau of Abyssinia	18,000
Kenia, Eastern Africa	17,384
Râs Dashan, Plateau of Abyssinia	15,159
Gambaragara, Central Africa	?15,000
Cameroon, Guinea, V.	13,126
Teneriffe, Canary Islands, V.	12,182
Aiashin or Mount Miltsin, Marocco	?12,000
Cathkin, Southern Africa	10,357
Tziafazanova, Madagascar	8,946

OCEANIA.

Mauna Kea, Sandwich Islands	13,953
Mount Kini-Balu, Borneo	13,694
Mauna Loa, Sandwich Islands, V.	13,675
Owen Stanley, Papua	?13,205
Mount Korinji, Sumatra	12,240
Semeru, Java	12,120
Dempo, Sumatra, V.	10,490
Tjerimai, Java, V.	10,069
Mount Ophir, Sumatra	9,623
Egmont, New Zealand, V.	8,270
Mayon, Luzon, V.	7,163
Mount Townsend, Australia	7,351
Orohena, Tahiti	7,339
Kosciusko, Australia	7,176
Mount Hotham, Australia	6,414
Kilauea, Sandwich Islands, V.	3,870

DRAINAGE OF THE WORLD.

North America.

Principal Rivers.	Tributaries.	Approximate Length in m.	Approximate Area of Basins in sq. miles.
Mississippi River	Lower Mississippi	1,300	165,000
Mississippi proper, 2,600 m.	Missouri	2,900	520,000
	Ohio	1,250	210,000
Missouri and Lower Mississippi, 4,200 miles	Arkansas	1,503	190,000
	Red	1,200	95,000
	Small Tributaries		60,000
Entire Mississippi Basin			1,240,000
Mackenzie		2,300	590,000
St. Lawrence		2,000	480,000
Saskatchewan		2,000	480,000
Columbia		1,000	300,000
Colorado (del Norte)		1,000	260,000
Rio Grande (del Norte)		1,500	240,000
Yukon River		1,700	200,000
Rio Grande (Mexico)		450	160,000
Sacramento		490	66,000
San Joaquin		400	
Rio Brazos		650	35,000
Rio Colorado, Texas		650	30,000
Alabama		650	30,000
St. John		450	25,000
Susquehanna		400	25,000
Hudson		325	12,000
Connecticut		350	10,600
Great Interior Basin			200,000

South America.

Principal Rivers.	Tributaries.	Approximate Length in m.	Approximate Area of Basins in sq. miles.
Amazon River, Proper course, 3,750 miles.	Madeira	2,200	360,000
	Rio Negro	1,600	290,000
	Tocantins	1,600	280,000
	Tapajoz	1,200	160,000
	Ucayali	1,400	150,000
	Purus	1,300	140,000
	Xingu	1,500	140,000
	Yapura	1,200	95,000
	Small Tributaries		745,000
Entire Amazon River Basin			2,360,000
Rio Parana and La Plata River, Proper course, 2,300 miles.	Paraguay	1,400	570,000
	Uruguay	1,000	160,000
	Pilcomayo	900	90,000
	Vermejo	600	60,000
	Small Tributaries		500,000
Entire Parana and La Plata Basin			1,380,000
Orinoco		1,500	350,000
Rio San Francisco		1,500	260,000
Rio Vermejo Salado or Colorado del Sur.		1,000	140,000
Magdelena		750	90,000
Rio Negro del Sur		750	50,000

Europe.

Principal Rivers.	Tributaries.	Approximate Length in m.	Approximate Area of Basins in sq. miles.
Danube River, Danube proper, 1,725 miles.	Pruth	360	315,000
	Theiss	500	
	Drave	360	
	Save	550	
Dnieper		1,230	185,000
Don		1,100	170,000
Dvina		1,000	130,000
Petchora		1,000	100,000
Rhine	Meuse	430	90,000
	Rhine proper	810	
Vistula		550	69,000
Elbe		800	60,000
Bug		300	57,000
Loire		850	52,000
Duna		600	44,000
Rhone		550	37,000
Po		450	31,000
Garonne-Gironde		380	27,000
Seine		498	23,000
Thames		215	6,200
Tagus		550	170,000
Guadiana		500	
Douro		450	
Guadalquivir		400	
Ebro		350	

Aralo-Caspian Basin and other Interior Basins of Asia.

Principal Rivers.	Tributaries.	Approximate Length in m.	Approximate Area of Basins in sq. miles.
Volga	Volga proper	2,500	550,000
	Kama	1,400	
Tarim		1,100	230,000
Amu-Daria		1,300	220,000
Ural		950	105,000
Syr-Daria		1,200	100,000
Hilmend		800	80,000

Asia.

Principal Rivers.	Tributaries.	Approximate Length in m.	Approximate Area of Basins in sq. miles.
Obe	Obe proper	3,000	1,250,000
	Irtysh	1,900	
Yenisei-Angara		3,400	1,050,000
Yang-Tse-Kiang		3,320	950,000
Lena		2,700	750,000
Amoor		2,650	730,000
Hoang Ho		2,800	700,000
Brahmaputra		2,300	450,000
Ganges		1,600	420,000
Indus		1,850	400,000
Mecon (Cambodia River)		2,500	400,000
Shat el Arab	Euphrates	1,750	250,000
	Tigris	1,150	
	Shat-el-Arab prop.	120	

DRAINAGE OF THE WORLD.

AFRICA.

PRINCIPAL RIVERS.	TRIBUTARIES.	Approximate Length in m.	Approximate Area of Basins in sq. miles.
Nile	Bahr el Abiad and Nile	?4,100	?1,400,000
	Blue Nile	900	
Congo	. . . .	3,000	1,350,000
Niger	. . . .	3,000	1,150,000
Zambesi	. . . .	1,600	900,000
Orange	. . . .	1,000	440,000
OCEANIA.			
Murray	. . . .	1,500	500,000

AREAS OF THE PRINCIPAL LAKES.

	Sq. miles.		Sq. miles.
Caspian Sea	169,700	Poyang	2,980
Lake Superior	31,400	Torrens	2,800
Victoria Nyanza	26,600	Gairdner	2,400
Aral Sea	25,913	Wener	2,300
Michigan	25,600	Kuku-Nor	2,040
Huron	23,800	Albert Nyanza	2,000
Tchad	?13,000	Peipus	1,920
Baikal	12,500	Urmiah	1,700
Erie	9,500	Moero	?1,700
Great Bear Lake	9,300	Van	1,414
Tanganyika	9,240	Chapala	1,321
Winnipeg	8,900	Saima	1,200
Great Slave Lake	8,300	Tzana or Dembea	1,050
Nyassa	8,200	Albert Edward Nyanza	?1,000
Ontario	7,300	Wetter	800
Balkash	6,400	Enara	689
Ladoga	6,190	Dead Sea	500
Maracaybo	5,300	Lake of the Woods	500
Onega	4,900	Moelar	320
Bangweolo	?4,450	Ngami	300
Titicaca	4,000	Balaton	255
Tengri-Nor	3,600	Leman or Geneva	240
Nicaragua	3,500	Constance	190
Great Salt Lake	3,200	Garda	140
Athabasca	3,200		
Eyre	3,000		

LENGTH OF DAYS AT VARIOUS CAPITALS.

Place.	Longest Day.	Shortest Day.
Stockholm	18h. 35m.	5h. 54m.
St. Petersburg	18h. 14m.	5h. 42m.
Edinburgh	17h. 32m.	6h. 50m.
Copenhagen	17h. 20m.	6h. 54m.
Dublin	16h. 56m.	7h. 18m.
Amsterdam	16h. 44m.	7h. 33m.
Berlin	16h. 38m.	7h. 30m.
London	16h. 32m.	7h. 44m.
Paris	16h. 6m.	8h. 10m.
Vienna	15h. 58m.	8h. 17m.
Boston	15h. 16m.	9h. 58m.
Constantinople	15h. 4m.	9h. 12m.
Naples	15h. 0m.	9h. 14m.
Madrid	15h. 0m.	9h. 14m.
Pekin	14h. 58m.	9h. 16m.
Washington	14h. 52m.	9h. 22m.
Cape Town	14h. 22m.	9h. 48m.

DIMENSIONS OF THE EARTH.

(69·1 miles to 1° at Equator),

	Miles.
Polar Diameter	7,899
Equatorial Diameter	7,925
Equatorial Circumference	24,899

AREA OF THE LAND SURFACE.

	Sq. miles.
Eastern Continent	31,600,000
Western Continent	15,600,000
Oceania (with Antarctic Lands)	4,800,000

AREA OF THE WATER SURFACE.

Pacific Ocean	70,000,000
Atlantic Ocean	35,000,000
Indian Ocean	28,000,000
Antarctic Ocean	8,000,000
Arctic Ocean	4,000,000
Total	197,000,000

Proportion of land to water-surface, 1 to 3.

LENGTH OF COAST-LINE AND AREA OF THE GRAND DIVISIONS.

(In round numbers, not including islands.)

	Coast-line in miles.	Area in sq. miles.	Area to one mile of coast in sq. miles.
Europe	20,000	3,800,000	190
North America	30,000	9,000,000	300
South America	17,000	6,800,000	400
Asia	35,500	16,000,000	450
Africa	16,200	11,600,000	715
Australia	8,760	2,945,000	338

HISTORICAL ARCTIC EXPLORATIONS.

The following are the farthest points of north lattitude reached by Arctic explorers, up to present date:—

Year.	Explorers.	N. Latitude.
1607	Hudson	80° 23′ 0″
1773	Phipps	80° 48′ 0″
1806	Scoresby	81° 12′ 42″
1827	Parry	82° 50′ 0″
1874	Meyer (on land)	82° 0′ 0″
1875	Markham and Parr (Nares' expedition)	83° 20′ 26″
1876	Payer	83° 7′ 0″
1884	Lockwood (Greeley's party)	83° 24′ 0″

The most northern observations of temperature taken for a complete year were those of the *Alert*—Captain Nares' expedition, 1875-6. The *Alert* reached and wintered in latitude 82° 27′ N., the highest northern latitude reached by a vessel up to the present time. The average temperature of the summer months was 34°, and of the winter 36°, with an average of 3° for the year. The lowest temperature registered was 73° in March at Floeberg Beach, by the *Alert* in 82° 27′ N.

Sea water freezes at about 28°. The greatest thickness attainable by ice in one season is about 7 feet. Old ice is believed to become thicker in a second winter, and to even reach 10 feet in thickness. Icebergs and sea glaciers reach an enormous thickness, but they are the accumulation of snow and ice alternately on the top of each other for years

AREA AND POPULATION OF THE DIFFERENT COUNTRIES OF THE WORLD.

NOTE.—The numbers in the last columns, 80, 83, etc., give the date of the census. E, E 80, etc., indicate that no census has been recently taken, and that the population here given has been calculated by means of Tables of Progression obtained from successive Census Reports. A E. Approximate Estimation. The signs at the left of the columns indicate the authorities for the area, as follows: (*) From planimetric estimations made expressly for this book; (†) Official estimations; (‡) From calculations made at the Justus Perthes Institute at Gotha; (§) From calculations made by General J. Strelbitsky.

NORTH AMERICA.	Area in square miles.	Population.	Date of Census.
*British North America, omitting the Bermudas and the West Indies	3,960,716	4,548,112	81, 85
‡Central America — †British Honduras	7,562	27,452	81
‡Central America — Guatemala	46,790	1,322,544	86
‡Central America — Salvador	7,230	634,120	85
‡Central America — Nicaragua	51,680	259,794	84
‡Central America — Honduras	46,535	323,274	84
‡Central America — Costa Rica	19,995	213,785	85
†Iceland and Greenland (Danish)	? 870,470	82,445	80
†Mexico	755,616	10,447,974	82
†United States — United States and Territories	3,024,880	64,500,000	90
†United States — Alaska Territory	531,409		
*†‡West Indies (including Miquelon and Bermuda, omitting Trinidad, Curaçoa, etc., belonging to S. America)	92,245	4,866,541	81 84
Total	9,415,118	77,826,041	
*The Great Lakes (Gt. B's. part, 32,423)	97,600		

EUROPE.	Area in square miles.	Population.	Date of Census.
†Austria-Hungary	240,347	37,882,712	80
‡Bosnia, Herzegovina, & Novi Bazar	26,586	1,504,091	85
†Lichtenstein	60	9,124	80
†Belgium	11,378	5,853,278	86
†Denmark (with Faroe Islands)	15,308	1,980,259	80
†France (with Corsica)	204,168	38,218,903	86
†German Empire	208,804	46,844,926	85
†Great Britain, Ireland, and Islands	121,483	35,241,482	81
†Malta, Gibraltar, Heligoland	126	193,438	84
§Greece (with Islands and Thessaly)	24,617	1,979,561	79
†Italy	114,454	29,699,785	86
‡Montenegro	3,489	236,000	80
†Monaco, San Marino, and Andorra	214	25,963	86
†Netherlands	12,765	4,336,012	86
†Luxemburg	999	213,283	85
†Portugal (without Madeira, etc.)	34,431	4,306,554	81
‡Roumania	50,163	5,376,000	E 80
§Russia in Europe (with Cis-Caucasia)	2,168,344	89,834,375	E 82
‡Servia	18,764	1,903,350	84
†Spain (without the Canary Islands)	193,029	16,961,742	E 84
§Sweden and §Norway — Sweden	170,350	4,682,769	E 86
§Sweden and §Norway — Norway	125,308	1,913,000	E 80
†Switzerland	16,389	2,846,102	80
‡Turkey (Possessions in Europe)	63,389	4,500,000	E 80
‡Eastern Roumelia	13,865	975,030	85
†Bulgaria	24,708	2,007,019	81
Total (Europe proper)	3,861,538	339,525,658	
*Without N. Zembla, Spitzbergen, etc.	80,460		

SOUTH AMERICA.	Area in square miles.	Population.	Date of Census.
‡Argentine Republic	1,095,392	2,942,000	E 82
‡Bolivia	472,033	2,303,000	A E
†Brazil	3,220,169	12,333,375	E 84
†Chili	261,010	2,439,537	E 85
†Tacna	20,471	28,300	76
‡Colombia (United States of)	320,857	3,001,323	70
‡Ecuador (with Galapagos Island)	251,038	1,054,651	85
†Paraguay	91,970	483,048	79
†Peru (without Tacna, etc.)	394,156	2,971,924	76
†Uruguay	65,593	559,668	84
†Venezuela	439,403	2,121,988	81
Guiana — †Dutch, with Curaçoa, etc.	46,415	115,977	83, 84
Guiana — ‡British, with Trinidad, etc.	93,598	437,511	84
Guiana — †French	46,895	32,656	82
Total	6,818,990	30,824,408	

	WEST INDIA ISLANDS.		Area in square miles.	Population.	Date of Census.
	Hayti — *Hayti	Independ.	9,233	800,000	A E
	Hayti — *Dominica	Independ.	20,563	300,000	E 80
	†Cuba (with Dependencies)	Sp.	45,890	1,521,684	80
	†Porto-Rico	Sp.	3,597	754,313	80
North American Islands.	†Antigua and Barbuda	Great Britain.	170	34,321	82
	†Bahamas (Caïcos, Turcs, etc.)		5,615	48,301	81
	†Barbadoes		166	171,860	81
	†Bermudas		19	14,888	84
	†Dominica		291	28,840	84
	‡Grenada and Grenadines		166	46,425	85
	†Jamaica and Caymans		4,428	583,204	81
	*Montserrat		31	10,818	84
	*Nevis, Redonda, Virgin Is.		111	11,864	81
	†St. Christopher and Anguilla		100	32,356	81
	‡Sa. Lucia		237	40,681	84
	‡St. Vincent		147	43,039	84
	†Tobago		114	19,079	84
	†Sa. Cruz	Den.	84	18,430	80
	†St. Thomas and St. John		58	15,333	80
	†Guadeloupe & Dependencies	Fr.	723	197,896	82
	†Martinique		381	166,988	82
	†St. Eustatius, St. Martin, etc.	Neth.	31	8,221	84
South American Islands.	†Curaçoa, Buenos Ayres, etc.		405	35,223	84
	†Trinidad	G.B.	1,751	166,628	84
	Total		91,314	5,068,392	

AREA AND POPULATION OF THE DIFFERENT COUNTRIES OF THE WORLD—*Continued.*

RUSSIAN EMPIRE.		Area in square miles.	Population.	Date of Census.
Russia in Europe	§Russia	1,888,263	77,879,521	E 82
	§Poland	49,173	7,416,958	E 82
	§Finland	144,303	2,176,421	E 84
	§Cis-Caucasia	86,605	2,361,475	E 83
*Nova Zembla, Spitzbergen, etc.		80,460		
Russia in Asia	§Trans-Caucasia and Armenia	95,961	4,173,378	E 83
	§Siberia	4,818,505	4,093,535	E 83
	§Central Asia	1,163,056	5,101,354	E 83
	‡Trans-Caspian Territory and Merv	201,815	710,000	A E
Total		8,528,141	103,912,642	
Without the Caspian and Aral Seas		195,613		

OCEANIA.		Area in square miles.	Population.	Date of Census.
MALAYSIA.				
†Java and Madura		50,848	21,500,000	E 85
†Borneo, Sumatra, Celebes, Spice Islands, S. Timor, Banca, Bally, etc. (Dutch Possessions only)		517,971	9,500,000	E 85
*N. Borneo, Labuan, Sarawak (Gr. B.)		46,789	? 406,000	A E
†Philippine and Sulu Islands (Spain)		114,400	5,636,232	80
†N. Timor and Cambing (Portuguese)		6,257	? 300,000	A E
*Ind. States, Borneo, Sumatra, Mindanao		106,035	? 1,010,000	A E
AUSTRALASIA AND POLYNESIA.				
†Papua, etc. (Dutch, British, German)		244,088	? 634,500	A E
†Australia	to Great Britain	2,944,627	2,542,458	84
†Tasmania, N. Zealand, etc.		130,795	736,939	84
*Feejee Islands, etc.		8,301	128,708	84
*N. Caledonia, Loyalty, etc.	to France	29,664	175,703	84
†Tahiti, Marquesas, etc.		3,632	25,580	84
*Caroline and Palaos Islands	to Spain	560	36,000	E
†Mariana Islands		420	8,665	80
†Hawaii or Sandwich Islands		6,545	80,578	84
†Samoa and Tonga Islands		1,461	62,000	A E
*Other Islands		? 39,400	? 445,000	A E
Total		4,251,793	43,227,863	

ASIA.	Area in square miles.	Population.	Date of Census.
*Afghanistan	201,000	4,000,000	A E
*Arabia (entire Peninsula)	1,115,000	? 8,000,000	A E
*Beluchistan	103,400	500,000	A E
‡Chinese Empire	4,464,659	403,259,000	82
†Corea (Independent Kingdom of)	84,280	10,518,937	83
*†India and Indo-China	2,279,930	294,168,874	81 E
*Kafiristan and Pamir (Independent)	44,100	? 50,000	A E
†Japan	147,719	38,526,407	85
‡Persia	636,614	10,000,000	A E
§Russia in Asia	6,279,337	14,078,267	83
‡Asiatic Turkey and Samos	730,923	16,173,000	A E
†Cyprus, Aden, Hong Kong, etc. (Great Britain)	3,937	383,869	81
†Macao (China) (Portuguese)	12	68,086	79
Total	16,090,911	799,826,440	

AFRICA.	Area in square miles.	Population.	Date of Census.
*Abyssinia	? 129,000	? 3,000,000	A E
†Algeria and Tunis (to France)	302,543	5,253,196	86
*Bechuanaland (Brit. Prot.)	184,980	33,800	85
‡British Gambia, Guinea and Islands	22,101	1,189,106	83
†‡Canary Is., Presidios, etc. (Spain)	5,827	339,356	77
‡Cape Colony, Natal, etc. (British)	448,744	1,805,018	85
‡Congo Free State	? 801,120	? 40,000,000	A E
*Egypt	394,240	6,817,265	82
*Egyptian Soudan	? 1,025,000	? 11,000,000	A E
*French Senegambia, Gaboon, etc.	? 315,000	? 670,000	
*German Protectorates	? 25,000	? 150,000	A E
†Liberia	14,360	1,068,000	A E
‡Madagascar (French Protectorate)	228,645	? 3,500,000	E
*Marocco (with Tuat)	? 324,000	? 6,140,000	A E
†Portuguese Possessions (with Islands)	618,745	2,881,224	A E
*The Sahara	? 2,000,000	? 2,500,000	E
‡Transvaal and Orange Free States	155,781	833,518	A E
‡Tripoli and Fezzan	398,991	? 1,000,000	E 80
*Sultanate of Zanzibar	3,073	? 1,500,000	A E
*Soudan States, C., E., and S. Regions	4,040,434	? 117,000,000	A E
Total	11,814,584	? 206,680,483	

	EAST INDIES IN DETAIL.		Area in square miles.	Population.	Date of Census.
India Proper.	†Ajmeer, Berar, and Curg	to Great Britain.	22,005	3,311,697	81
	†Assam		46,341	4,881,426	81
	†Bengal		193,198	69,536,861	81
	†Bombay (with Scindh)		124,122	16,454,414	81
	†British Punjab		106,632	18,850,437	81
	†Central Provinces		84,445	9,838,791	81
	†N. W. Provinces and Oude		106,111	44,107,869	81
	†Madras		141,001	31,170,631	81
	†Ceylon, Andaman, etc.		27,894	2,811,746	83
	†N. W. Provinces, Punjab, Bombay, etc., Tributary Nat. States		143,529	13,254,402	81
	†Baroda and Cen. States	Native States.	83,649	11,446,913	81
	†Hyderabad, Rajputana		211,557	20,113,886	81
	†Travancore and Cochin		8,091	3,001,436	81
	†Mysore		21,723	4,186,188	81
	‡Kashmir and Ladakh		99,600	1,091,000	E
	*Nepal, Bhotan, Sikkim		74,367	2,085,000	E
	*Manipur and Bajaur		7,954	270,000	E
	†French Possessions in India proper		196	273,283	82
	†Portuguese Possessions		1,373	481,467	81
Indo-China.	†L. Burmah, Straits Set.	to G. B.	88,665	4,570,771	81, 84
	*Burmah		122,500	3,600,000	A E
	*Malay St. (Protectorate)		21,500	294,000	A E
	‡Siam and Tributary States		280,745	5,750,000	A E
	*Tran-Ninh and Muang tribes		?32,910	?1,600,000	A E
	†L. Cochin China, Cambodia	to Fr.	55,488	3,142,000	82
	*Tonkin		65,000	?12,000,000	A E
	‡Annam (Protectorate)		106,334	6,045,000	E 83
	Total India and Indo-China		2,279,930	294,168,874	

CHINESE EMPIRE IN DETAIL.	Area in square miles.	Population.	Date of Census.
‡China (with Formosa and Hainan)	1,554,576	382,079,000	42, 79, 82
‡Manchuria	379,479	12,000,000	A E
‡Mongolia	1,304,473	2,000,000	A E
‡Sungaria	134,355	600,000	A E
‡Eastern Turkestan	435,964	580,000	A E
‡Thibet	655,812	6,000,000	A E
Total	4,464,659	403,259,000	

GERMAN EMPIRE IN DETAIL.	Area in square miles.	Population.	Date of Census.
Kingdom of Prussia	134,789	28,313,833	1885
,, ,, Bavaria	29,291	5,416,180	..
,, ,, Wurtemberg	7,531	1,995,168	,,
,, ,, Saxony	5,789	3,179,168	,,
Grand Duchy of Baden	5,803	1,600,839	,,
,, ,, ,, Mecklenburg-Schwerin	5,137	575,140	,,
,, ,, ,, Mecklenburg-Strelitz	1,131	98,371	..
,, ,, ,, Hesse	2,965	956,272	..
,, ,, ,, Oldenberg	2,479	341,525	..
,, ,, ,, Saxe-Weimar	1,387	313,946	,,
Duchy of Anhalt	906	247,603	,,
,, ,, Brunswick	1,425	372,388	,,
,, ,, Saxe-Altenburg	511	161,460	,,
,, ,, Saxe-Coburg-Gotha	760	198,829	,,
,, ,, Saxe-Meiningen	953	214,697	,,
Principality of Lippe-Detmold	472	123,250	,,
,, ,, Lippe-Schaumburg	131	37,204	,,
,, ,, Reuss-Schleitz	319	112,118	,,
,, ,, Reuss-Greitz	122	55,204	,,
,, ,, Schwartzburg-Rudolstadt	363	83,836	..
,, ,, Schwartzburg-Sonderhausen	333	73,606	,,
,, ,, Waldeck	433	56,565	,,
City of Hamburg	158	518,620	,,
Cities of Bremen and Lubeck	214	234,050	,,
Province of Alsace and Lorraine	5,602	1,564,354	,,
Total	208,804	46,844,926	

RECAPITULATION.			
North America (with Greenland, etc.)	9,415,118	77,826,041	Varies.
South America	6,818,990	30,824,408	,,
Europe (with N. Zembla, etc.)	3,941,998	339,525,658	,,
Asia	16,090,911	799,826,110	,,
Africa	11,814,584	206,680,483	,,
Oceania and Antarctic Lands	4,801,793	43,227,863	,,
Total	52,883,094	1,497,910,863	

AREA AND POPULATION OF THE DIFFERENT COUNTRIES OF THE WORLD—*Continued.*

	BRITISH EMPIRE IN DETAIL.		Area in square miles.	Population.	Date of Census.
	IN EUROPE.				
Great Britain	†England and Wales, etc.		59,132	26,331,073	81
	†Scotland		29,820	3,735,573	81
	†Ireland		32,531	5,174,836	81
	†Malta, Gibraltar, Heligoland		126	193,438	84
	IN N. AND S. AMERICA.				
Canada	*British Columbia		341,305	49,459	81
	*Vancouver Island		18,937		
	*Manitoba		123,200	65,954	81
	†New Brunswick		27,322	321,233	81
	†Nova Scotia (with Cape Breton Is.)		21,731	440,572	81
	*Ontario		213,440	1,923,228	81
	†Prince Edward Island		2,173	108,891	81
	***Quebec**		**198,725**	**1,359,027**	**81**
	*Arctic Archipelago, etc.		599,208	4,000	81
	*Alberta Ty.		102,912	15,533	85
	*Assiniboia Ty.	Including the interior waters.	91,350	22,083	85
	*Athabasca Ty.		111,758	10,038	81
	*Keewatin Ty.		369,316	8,000	A E
	*North-East Ty.		392,003	4,016	81
	*North-West Ty.		1,057,486	7,000	81
	*Saskatchewan Ty.		114,300	10,746	85
	†British Honduras		**7,562**	**27,452**	**81**
	*Labrador		135,270	1,000	81
	†Newfoundland		40,280	197,332	84
	*†British W. Indies and the Bermudas		11,595	1,105,676	81, 84
	‡British Guiana		85,425	269,330	84
	†Trinidad, Falkland, and S. Georgia Is.		8,173	168,181	84

	BRITISH EMPIRE—*Continued.*	Area in square miles.	Population.	Date of Census.
	IN ASIA.			
	†India	1,323,298	252,939,063	81
	†Ceylon, Andaman, and Nicobar Is.	27,894	2,811,746	83
	†L. Burmah, Straits Settlements, etc.	109,465	4,570,771	84
	*Burmah	122,500	3,600,000	A E
	†Cyprus, Aden, Hong Kong, etc.	3,937	383,869	81
	IN AFRICA.			
	‡Cape Colony and Dependencies	427,714	1,380,523	85
	‡Natal, Zulu Reservation, etc.	21,030	424,495	84
	‡Bechuana Prot. and Walfisch Bay	?184,980	33,800	85
	†British Gambia, Guinea Islands, etc.	22,101	1,189,106	83
	IN OCEANIA.			
	*N. Borneo and Labuan I.	22,039	156,298	A E
	*Sarawak (Protectorate)	24,750	250,000	A E
Australia	‡New South Wales	309,175	921,268	84
	†Victoria	87,884	961,276	84
	‡Queensland	668,224	309,913	84
	†South and North Australia	903,690	317,043	84
	‡West Australia	975,920	32,958	84
	†New Zealand and Norfolk	104,420	564,966	84
	‡Tasmania	**26,375**	**130,541**	**84**
	‡British Papua and adjacent Islands	85,330	? 137,500	A E
	*†Feejee and other Islands	8,301	128,708	84
	Australia and New Zealand natives	—	96,432	85
	Total	9,653,841	312,989,379	

PRINCIPAL POWERS.

	Area in square miles.	Population.
The Chinese Empire	4,464,659	403,259,000
The British Empire	9,653,841	312,989,379
The Russian Empire	8,528,141	103,912,642
France and her Colonies	1,130,164	66,206,759
The United States	3,556,289	64,500,000
The German Empire and Colonies	322,144	47,291,926
The Austro-Hungarian Empire	266,993	39,395,927
Netherlands and her Colonies	696,439	35,865,231
Italy	114,454	29,699,785
Turkish Empire (with Turkish Arabia)	860,000	26,000,000
Spain and her Colonies	353,723	25,246,760

SPORTING MATTERS.

BEST RECORDS IN COURSING, CYCLING, ROWING, RACING, RUNNING, AND WALKING.

COURSING.

Winners of the Waterloo Cup.

Year.	Nominator.	Winner.	Runner up.
1861	Mr. Ivie Campbell	Canaradzo . .	Sea Rock.
1862	Mr. Callander . .	Roaring Meg .	Bowfell.
1863	Mr. T. Lister . . .	Chloe	Rebe.
1864	Mr. Williams . . .	King Death . .	Rebe.
1865	Col. Goodlake . . .	Meg	King Tom.
1866	Mr. Gordon . . .	Brigadier . . .	Field Fare.
1867	Mr. E. Stocker . .	Lobelia . . .	Royal Sea.
1868	Lord Lurgan . . .	Master M'Grath	Cock Robin.
1869	Lord Lurgan . . .	Master M'Grath	Bab at the Bowster.
1870	Mr. J. Spinks . .	Sea Cove . . .	Bendimere.
1871	Lord Lurgan . . .	Master M'Grath	Pretender.
1872	Mr. J. Briggs . .	Bed of Stone .	Peasant Boy.
1873	Mr. R. Jardine . .	Muriel . . .	Peasant Boy.
1874	Mr. C. Morgan . .	Magnano . . .	Surprise.
1875	Mr. Hutchinson . .	Honeymoon . .	Corby Castle.
1876	Mr. R. M. Douglas .	Donald . . .	Lord Glendyne.
1877	Mr. Wilkins . . .	Coomassie . .	Braw Lass.
1878	Mr. H. F. Stocken .	Coomassie . .	Zaze.
1879	Mr. H. G. Miller .	Misterton . .	Commerce.
1880	Mr. Carruthers . .	Honeywood . .	Plunger.
1881	Mr. H. G. Miller .	Princess Dagmar	Bishop.
1882	Capt. Ellis . . .	Snowflight . .	Hornpipe.
1883	Mr. G. J. Alexander	Wild Mint . .	Snowflight.
1884	Mr. C. Marfleet (Mr. C. Mayer's) . .	Mineral Water .	Greentick.
1885	Mr. E. Dent . . .	Bit of Fashion .	Divided.
	Mr. J. Hinks (Mr. C. Hibbert's) . . .	Miss Glendyne .	
1886	Mr. R. B. Carruthers (Mr. C. Hibbert's)	Miss Glendyne .	Penelope II.
1887	Mr. R. F. Gladstone	Greater Scot .	Divided.
	Mr. T. D. Hornby .	Herschel . . .	
1888	Mr. L. Pilkington .	Burnaby . . .	Duke Macpherson.
1889	Col. North . . .	Fullerton . . .	Divided.
	Mr. J. Badger (Col. North's	Troughend . .	
1890	Col. North . . .	Fullerton . . .	Downpour.
1891	Col. North . . .	Fullerton . . .	Faster and Faster.
1892	Col. North . . .	Fullerton . .	Fitz Fife.
1893	Mr. R. L Cotterill .	Character . .	Button Park.
1894	Count Strogonoff .	Texture . . .	Falconer.

CRICKET.

Winners of the Oxford and Cambridge Match since 1850.

1850. Oxford won by 127 runs.
1851. Cambridge won in one innings.
1852. Oxford won in one innings.
1853. Oxford won in one innings.
1854. Oxford won in one innings by 8 runs.
1855. Oxford won by 3 wickets.
1856. Cambridge won by 3 wickets.
1857. Oxford won by 81 runs.
1858. Oxford won in one innings.
1859. Cambridge won by 28 runs.
1860. Cambridge won by 3 wickets.
1861. Cambridge won by 133 runs.
1862. Cambridge won by 8 wickets.
1863. Oxford won by 8 wickets.
1864. Oxford won by 4 wickets.
1865. Oxford won by 114 runs.
1866. Oxford won by 13 runs.
1867. Cambridge won by 5 wickets.
1868. Cambridge won by 168 runs.
1869. Cambridge won by 58 runs.
1870. Cambridge won by 2 runs.
1871. Oxford won by 8 wickets.
1872. Cambridge won in one innings by 166 runs.
1873. Oxford won by 3 wickets.
1874. Oxford won in one innings by 92 runs.
1875. Oxford won by 6 runs.
1876. Cambridge won by 9 wickets.
1877. Oxford won by 10 wickets.
1878. Cambridge won by 238 runs.
1879. Cambridge won by 9 wickets.
1880. Cambridge won by 115 runs.
1881. Oxford won by 135 runs.
1882. Cambridge won by 7 wickets.
1883. Cambridge won by 7 wickets.
1884. Oxford won by 7 wickets.
1885. Cambridge won by 7 wickets.
1886. Oxford won by 123 runs.
1887. Oxford won by 7 wickets.
1888. Drawn, owing to rain.
1889. Cambridge won by an innings.
1890. Cambridge won by 7 wickets.
1891. Cambridge won by 2 wickets.
1892. Cambridge won by 5 wickets.
1893. Cambridge won by 266 runs.
1894. Oxford won by 8 wickets.
1895. Cambridge won by 134 runs.

Winners of the Eton and Harrow Match.

1832. Eton won in one innings and 156 runs.
1833. Harrow won by 8 wickets.
1834. Harrow won by 13 runs.
1835. Eton won by 165 runs.
1836. Harrow won by 9 wickets.

Winners of the Eton and Harrow Match—continued.

1837. Eton won by 8 wickets.
1838. Eton won in one innings and 30 runs.
1839. Eton won by 8 wickets.
1840. Eton won by 31 runs.
1841. Eton won in one innings and 175 runs.
1842. Harrow won by 65 runs.
1843. Harrow won by 20 runs.
1844. Eton won in one innings and 69 runs.
1845. Eton won in one innings and 174 runs.
1846. Eton won in one innings and 135 runs.
1847. Eton won by 9 wickets.
1848. Harrow won by 41 runs.
1849. Harrow won by 77 runs.
1850. Eton won by 7 wickets.
1851. Harrow won by 8 wickets.
1852. Harrow won by 75 runs.
1853. Harrow won by 3 wickets.
1854. Harrow won by 98 runs.
1855. Harrow won in one innings by 66 runs.
1858. Harrow won in one innings by 7 runs.
1859. Harrow won in one innings by 48 runs.
1860. Unfinished.
1861. Unfinished.
1862. Eton won by 54 runs.
1863. Unfinished.
1864. Harrow won in one innings and 67 runs.
1865. Harrow won in one innings and 51 runs.
1866. Harrow won in one innings and 136 runs.
1867. Unfinished.
1868. Harrow won by 7 wickets.
1869. Eton won in one innings and 19 runs.
1870. Eton won by 21 runs.
1871. Eton won in one innings and 77 runs.
1872. Eton won by 6 wickets.
1873. Harrow won by 5 wickets.
1874. Eton won by 5 wickets.
1875. Unfinished.
1876. Eton won in one innings and 24 runs.
1877. Unfinished.
1878. Harrow won by 20 runs.
1879. Unfinished.
1880. Harrow won by 95 runs.
1881. Harrow won by 112.
1882. Unfinished.
1883. Unfinished.
1884. Unfinished.
1885. Harrow won by 3 wickets.
1886. Eton won by 6 wickets.
1887. Eton won by 5 wickets.
1888. Harrow won by 156 runs.
1889. Harrow won by 9 wickets.
1890. Unfinished owing to rain.
1891. Harrow won by 7 wickets.
1892. Eton won by 64 runs.
1893. Eton won by 9 wickets.
1894. Unfinished.
1895. Unfinished.

The highest individual score ever made in any match is 485, by Mr. A. E. Stoddart, for the Hampstead Club against the Stoics, in August, 1886.

The highest total ever obtained in a first-class match is 803, by the Non-Smokers against the Smokers, on the East Melbourne Ground in Australia, in March, 1887.

The highest total ever made in a first-class match in England is 703, obtained by Cambridge University against Sussex, at Brighton, in June, 1890.

The highest total ever obtained in a first-class County match is 698, by Surrey against Sussex, at the Oval, in August, 1888.

The highest individual innings ever played in a first-class match is 424 by Mr. G. A. Maclaren for Lancashire against Somerset, July, 1895. The only other individual innings of over three hundred in first-class matches are: 344 by Mr. W. G. Grace for the M.C.C. against Kent, in the Canterbury week of 1876; 338 by Mr. W. W. Read, for Surrey against Oxford University, at the Oval, in June, 1888; 321 by Mr. W. L. Murdoch, for New South Wales against Victoria, at Sydney, New South Wales, in February, 1882; and 318 by Mr. W. G. Grace, for Gloucestershire against Yorkshire, at Cheltenham, in August, 1876. The innings of Mr. Maclaren is a record in first-class county matches.

The highest total ever obtained in England by an Australian eleven is 643, by the great team of 1882, against Sussex, at Brighton.

The highest number of runs ever obtained in a first-class match is 1,411, in the inter-Colonial match between New South Wales and Victoria, at Sydney, in February, 1882.

The highest number of runs ever obtained in a first-class match in England is 1,402, in the match between Cambridge University and Sussex, at Brighton, June 1891.

The lowest total in a first-class match is 12, by Oxford University against the M.C.C. and Ground, at Oxford, in May, 1877.

The most productive partnership on record in any match was that of Messrs. A. H. Trevor and G. F. Vernon for the Orleans Club against Rickling Green, at Rickling Green, in August, 1882, the two gentlemen putting on 605 runs while they were together. Mr. Trevor scored 338 and Mr. Vernon 259.

The most productive partnership on record in a first-class match was that of Shrewsbury and Gunn, for Notts against Sussex, at Nottingham, in May, 1890, the two batsmen adding 398 runs for the second wicket. Shrewsbury scored 269 and Gunn 196.

The record performance for the first wicket in any match is 470, by Messrs. L. Wilson and W. G. Wyld, for Beckenham against Bexley, at Beckenham, in August, 1885. Mr. Wilson made 246 not out and Mr. Wyld 203 not out.

The record for the first wicket in a first-class match is 283, by Messrs. W. G. Grace and B. B. Cooper, for the Gentlemen of the South against the Players of the South, at the Oval in 1869. Mr. Grace made 180 and Mr. Cooper 101.

Mr. W. G. Grace alone among modern batsmen has scored two separate hundreds in a first-class match, but he has performed this exceptional feat three times—at Canterbury in 1868; at Clifton in 1887; and again at Clifton in 1889.

CYCLING RECORDS ON THE ROAD.

Safety Bicycle.

Miles.	H.	M.	S.	Name.	Date.
50	2	0	5	A. A. Chase	1895
100	4	39	28	A. A. Chase	1894

Greatest distance ridden in 12 hrs.—217 miles, by M. A. Holbein, 1895; 24 hrs.—398 miles, by M. A. Holbein, 1895.

Tandem Safety.

Miles.	H.	M.	S.	Name.	Date.
50	2	1	8	A. E. Walters and F. Black	1895
100	4	54	13	F. R. Cook and A. E. Marsh	1894

Greatest distance ridden in 24 hrs.—377 miles, by G. P. Mills and T. A. Edge, July, 1895.

Tricycle.

Miles.	H.	M.	S.	Name.	Date.
50	2	22	55	F. T. Bidlake	1894
100	5	15	57	F. T. Bidlake	1894

Tandem Tricycle.

Miles.	H.	M.	S.	Name.	Date.
50	2	16	50	S. D. Begbie and T. G. King, jun.	1894
100	5	30	31	J. E. Bates and F. E. Edge	1894

G. P. Mills and T. A. Edge rode Tandem Tricycle from Land's End to John-o'-Groats, distance 876 miles, in 3 days 4 hrs. 46 min., 1895.

R. L. Jefferson rode Safety Bicycle from London to Moscow and back, distance 4,281 miles, in 49 days 6 min., June, 1895.

CYCLING RECORDS—*Professional.*

Path. *Ordinary or High Bicycle.*

Miles.	Time. H.	M.	S.	Name.	Date.
1	0	2	33⅕	A. H. Robb	1888
5	0	13	27	H. G. Crocker	1888
10	0	27	8	,,	1888
20	0	56	28	J. Dubois	1887
50	2	29	41	W. F. Knapp	1888
100	5	5[illegible]	21	,,	1887
200	13	30	25	C. Terront	1880

Greatest distance ridden without dismounting—230 miles 409 yards, in 16 hrs. 59 min. 30 sec., by H. Higham, 1880.

Path. *Safety.*

Miles.	Time. H.	M.	S.	Name.	Date.
*¼	0	0	29	A. A. Zimmerman	1894
¼	0	0	30⅕		1894
1	0	1	59⅕	W. C. Sanger	1895
2	0	4	32⅖	A. W. Harris	1894
3	0	6	59	,,	1894
4	0	9	29⅕	,,	1894
5	0	10	50⅕	J. Michael	1895
10	0	21	47⅖	,,	1895
15	0	32	40⅖	,,	1895
20	0	44	20⅗	,,	1895
30	1	7	30	,,	1895
40	1	30	42⅕	,,	1895
50	1	55	11⅕	,,	1895
60	2	20	36⅕	,,	1895
70	2	47	5⅕	,,	1895
80	3	11	50⅖	,,	1895
90	3	36	47⅗	,,	1895
100	4	1	30⅖	,,	1895
140	5	48	42⅕	,,	1895
144	5	59	16⅕	,,	1895

* Flying start.

Greatest distance ridden in 6 hrs.—144 miles 590 yds., by J. Michael, July 13, 1895. This is the best performance (British) on record, either amateur or professional.

Revierre rode 523 miles 1,044 yds. in 24 hrs., Paris, July 27–8, 1895.

CYCLING RECORDS—*Amateur.*

Path. *Tandem Safety.*

Miles.	Time. H.	M.	S.	Name.	Date.
*¼	0	0	26⅖	J. Platt-Betts and A. J. Watson	1895
¼	0	0	31⅖	F. C. Weatherley & W. Rosser	1895
½	0	0	58⅕	Ditto	1895
¾	0	1	27⅖	Ditto	1895
1	0	1	55	Ditto	1895
5	0	10	35⅕	W. J. Jones and J. E. Ridout	1895
10	0	21	25	Ditto	1895
15	0	33	22⅖	J. B. Cook and W. S. Yeoman	1895
20	0	44	12	Ditto	1895
25	0	55	16⅖	Ditto	1895
30	1	6	39⅕	Ditto	1895
40	1	18	1⅖	Ditto	1895
50	1	52	13⅕	Ditto	1895
60	2	15	12	Ditto	1895
75	2	49	25⅕	Ditto	1895
90	3	24	21	Ditto	1895
100	3	47	21⅘	Ditto	1895

* Flying start.

TANDEM TRICYCLE.

M.	Time.			Name.	Date.
	H.	M.	S.		
*¼	0	0	29⅘	J. E. L. Bates and L. Stroud	1894
¼	0	0	37⅖	H. B. Hoch and H. S. Smyth	1894
½	0	1	10⅖	Ditto	1894
¾	0	1	45⅖	Ditto	1894
1	0	2	21	Ditto	1894
5	0	12	55	J. E. L. Bates and L. Stroud	1894
10	0	26	2	Ditto	1894
15	0	39	5	Ditto	1894
20	0	51	58⅘	Ditto	1894
25	1	7	26⅘	J. A Poole and A. Hoffman	1894
30	1	21	47⅖	Ditto	1894
40	1	53	3⅗	Ditto	1894
50	2	21	33⅘	Ditto	1894
60	2	52	6⅕	Ditto	1894
70	3	24	19⅘	Ditto	1894

* Flying start.

Greatest distance ridden in 1 hour—23 miles 310 yards, by J. E. L. Bates and L. Stroud, May, 1894.

SAFETY BICYCLE.

M.	Time.			Name.	Date.
	H.	M.	S.		
*¼	0	0	26⅘	F. W. Weatherly	1895
¼	0	0	31⅖	T. Osborne	1894
½	0	1	0	Platt-Betts	1894
¾	0	1	29⅘	Ditto	1894
1	0	2	1⅗	Ditto	1894
2	0	4	19⅖	Ditto	1894
3	0	6	36⅖	A. A. Chase.	1895
4	0	8	44⅕	J. A. Robertson	1894
5	0	10	57⅖	Ditto	1894
10	0	22	10⅖	W. Henie	1894
20	0	44	36⅕	J. A. Robertson	1894
25	0	55	49⅕	Ditto	1894
50	1	56	18⅕	C. G. Wridgway	1895
100	4	5	30	Ditto	1895
200	9	8	4⅗	G. Hunt	1894
300	14	48	3⅖	F. W. Shorland	1894
400	20	42	55	Ditto	1894

* Flying start.

Greatest distance ridden in :

1 hour—25 miles 604 yards, by R. Palmer, 1895.
2 hours—49 miles 580 yards, by R. Palmer, 1895.
3 hours—71 miles 360 yards, by A. Horton, 1895.
4 hours—92 miles 1,260 yards, by C. G. Wridgway, 1895.
15 hours—303 miles 1,330 yards, by G. Hunt, 1895.
20 hours—391 miles 700 yards, by G. Hunt, 1895.
24 hours—460 miles 1,296 yards, by F. W. Shorland, 1894.

TRICYCLE.

M.	Time.			Name.	Date.
	H.	M.	S.		
*¼	0	0	31⅘	L. Stroud	1893
¼	0	0	33⅘	Ditto	1893
½	0	1	10⅗	W. Ellis	1894
¾	0	1	45⅗	Ditto	1894
1	0	2	21⅕	Ditto	1894
5	0	12	35⅗	Ditto	1894
10	0	25	16⅕	Ditto	1894
20	0	51	4⅖	Ditto	1894
50	2	14	29	Ditto	1894
80	3	37	35	Ditto	1894
100	4	38	58⅕	Ditto	1894
200	10	42	42⅗	E. J. Steel	1894
300	17	13	44	F. T. Bidlake	1893
400	23	27	28⅘	Ditto	1893

* Flying start.

Greatest distance ridden in: 1 hour—23 miles 920 yards; 2 hours—44 miles 1,100 yards; 3 hours—66 miles 480 yards; 4 hours—86 miles 1,370 yards, all by W. Ellis, 1894.

TRIPLETS.

M.	Time.			Name.	Date.
	H.	M.	S.		
1	0	2	0	W. Taylor, T. Butler and R. Clarke	1894
5	0	11	33⅖	H. H. Clarke, P. Litchfield and F. J. Little	1895
10	0	22	58⅕	Ditto	1895
25	0	57	23⅘	Ditto	1895
50	2	1	23⅘	Ditto	1895
75	3	6	21	Ditto	1895
100	4	14	10⅖	Ditto	1895

ORDINARY OR HIGH BICYCLE.

M.	Time.			Name.	Date.
	H.	M.	S.		
¼	0	0	33⅕	J. B. Archer	1890
1	0	2	28⅘	F. J. Osmond	1890
10	0	27	55⅕	B. W. Attlee	1891
50	2	28	10⅕	F. W. Shorland	1891
100	5	5	3⅗	Ditto	1892

Greatest distance ridden in 1 hour—21 miles 180 yards, by B. W. Attlee, 1891.

ROWING.

Oxford and Cambridge Boat Race.

The following table gives the list of winners from the commencement of this inter University contest, from which it will be gathered that Oxford has now won 29 times against the 22 victories recorded for Cambridge :—

Year.	Date		Winner.	Course.	Time.		Won by.
					m.	s.	
1829	June	10	Oxon.	Henley.	14	30	Easily.
1836	June	17	Camb.	W. to P.	36	0	1 min.
1839	April	3	Camb.	W. to P.	31	0	1 m. 45 s.
1840	April	15	Camb.	W. to P.	29	30	¾ length.
1841	April	14	Camb.	W. to P.	32	30	1 m. 4 s.
1842	June	11	Oxon.	W. to P.	30	45	13 sec.
1845	Mar.	15	Camb.	P. to M.	23	30	30 sec.
*1846	April	3	Camb.	M. to P.	21	5	2 lengths.
1849	Mar.	29	Camb.	P. to M.	22	0	Easily.
1849	Dec	15	Oxon.	P. to M.	—		Foul.
1852	April	3	Oxon.	P. to M.	21	36	27 sec.
1854	April	8	Oxon.	P. to M.	25	29	11 strokes.
1856	Mar.	15	Camb.	M. to P.	25	50	½ length.
†1857	April	4	Oxon.	P. to M.	22	36	35 sec.
1858	Mar.	27	Camb.	P. to M.	21	23	22 sec.
1859	April	15	Oxon.	P. to M.	24	40	Cam. sank.
1860	Mar.	31	Camb.	P. to M.	26	5	1 length.
1861	Mar.	23	Oxon.	P. to M.	23	30	48 sec.
1862	April	12	Oxon.	P. to M.	24	41	30 sec.
‡1863	Mar.	28	Oxon.	M. to P.	23	6	43 sec.
1864	Mar.	19	Oxon.	P. to M.	21	40	20 sec.
1865	April	8	Oxon.	P. to M.	21	24	4 lengths.
1866	Mar.	24	Oxon.	P. to M.	25	35	15 sec.
1867	April	13	Oxon.	P. to M.	22	40	½ length.
1868	April	4	Oxon.	P. to M.	20	56	6 lengths.
1869	Mar.	17	Oxon.	P. to M.	20	5	3 lengths.
1870	April	6	Camb.	P. to M.	22	4	1¼ length.
1871	April	1	Camb.	P. to M.	23	5	1 length.
1872	Mar.	23	Camb.	P. to M.	21	15	2 lengths.
§1873	Mar.	29	Camb.	P. to M.	19	35	3¼ lengths.
1874	Mar.	28	Camb.	P. to M.	22	35	3 lengths.
1875	Mar.	20	Oxon.	P. to M.	22	2	10 lengths.
1876	April	8	Camb.	P. to M.	20	20	Easily.
‖1877	Mar.	24	D'heat.	P. to M.	24	8	—
1878	April	13	Oxon.	P. to M.	22	13	10 lengths.
1879	April	5	Camb.	P. to M.	21	18	3½ lengths.
1880	Mar.	22	Oxon.	P. to M.	21	23	3¾ lengths.
1881	April	8	Oxon.	P. to M.	21	51	3 lengths.
1882	April	1	Oxon.	P. to M.	20	12	7 lengths.
1883	Mar.	15	Oxon.	P. to M.	21	8	4 lengths.
1884	April	7	Camb.	P. to M.	21	40	3 lengths.
1885	Mar.	28	Oxon.	P. to M.	21	35	3 lengths.
1886	April	3	Camb.	P. to M.	22	29½	¾ length.
a1887	Mar.	26	Camb.	P. to M.	20	52	3½ lengths.
1888	Mar.	24	Camb.	P. to M.	20	48	6 lengths.
1889	Mar.	30	Camb.	P. to M.	20	14	2½ lengths.
1890	Mar.	26	Oxon.	P. to M.	22	3	1 length.
1891	Mar.	21	Oxon.	P. to M.	21	48	Sh'rt ½ lgth.
1892	April	9	Oxon.	P. to M.	19	21	2¼ lengths.
1893	Mar.	22	Oxon.	P. to M.	18	47	2½ lengths.
1894	April	17	Oxon.	P. to M.	29	31	3½ lengths.
1895	Mar.	30	Oxon.	P. to M.	20	5	2¼ lengths.

ROWING.

WINNERS OF THE WINGFIELD SCULLS SINCE 1886.

Year.	Winner.	Time.	
		m.	s.
1886	F. J. Pitman	24	12
1887	G. Nickalls	25	23
1888	G. Nickalls	23	36
1889	G. Nickalls	—	
1890	J. C. Gardner	26	20
1891	G. Nickalls	—	
1892	V. Nickalls	23	40
1893	G. E. B. Kennedy	24	56
1894	V. Nickalls	23	30
1895	V. Nickalls	26	6

Course—Putney to Mortlake, or *vice versá.*

LENGTHS OF ENGLISH RACECOURSES.

NEWMARKET.	Miles.	EPSOM.	Miles.
Across the Flat .	1·292	Craven . . .	1·25
Beacon . . .	4·206	Derby and Oaks .	1·5
Cambridgeshire .	1·136	Metropolitan .	2·25
Cesarewitch . .	2·226		
Round . . .	3·579	GOODWOOD.	
Rowley Mile . .	1·009	Cup Course . .	2·5
Summer Course .	2·000		
Two-year-old (new) .	0·702	LIVERPOOL.	
Yearling . .	0·277	New Course . .	1·5
DONCASTER.		New Castle . .	1·796
		Oxford . . .	2·000
Circular . . .	1·915		
Fitzwilliam . .	1·000	YORK.	
Red House . .	0·711		
St. Leger . .	1·825	Stakes Course .	1·75
Cup Course . .	2·634	Two-mile . .	1·923

RACING.

WINNERS OF THE PRINCIPAL HORSE RACES SINCE 1850.

THE DERBY.—1850, Lord Zetland's Voltigeur, 2 m. 50 s.; 1851, Sir J. Hawley's Teddington, 2 m. 51 s.; 1852, Mr. Bowes's Daniel O'Rourke, 3 m. 2 s.; 1853, Mr. Bowes's West Australian, 2 m. 55½ s.; 1854, Mr. Gully's Andover, 2 m. 52 s.; 1855, Mr. Popham's Wild Dayrell, 2 m. 54 s.; 1856, Admiral Harcourt's Ellington, 3 m. 4 s.; 1857, Mr. W. I'Anson's Blink Bonny, 2 m. 45 s.; 1858, Sir J. Hawley's Beadsman, 2 m. 54 s.; 1859, Sir J. Hawley's Musjid, 2 m. 59 s.; 1860, Mr. Merry's Thormanby, 2 m. 55 s.; 1861, Colonel Towneley's Kettledrum, 2 m. 43 s.; 1862, Mr. C. Snewing's Caractacus, 2 m. 45½ s.; 1863, Mr. R. C. Naylor's Macaroni, 2 m. 50½ s.; 1864, Mr. W. I'Anson's Blair Athol, 2 m. 43 s.; 1865, Count de Lagrange's Gladiateur, 2 m. 46 s.; 1866, Mr. Sutton's Lord Lyon, 2 m. 50 s.; 1867, Mr. H. Chaplin's Hermit, 2 m. 52 s.; 1868, Sir J. Hawley's Blue Gown, 2 m. 43½ s.; 1869, Mr. J. Johnston's Pretender, 2 m. 52½ s.; 1870, Lord Falmouth's Kingcraft, 2 m. 45 s.; 1871, Baron Rothschild's ch c Favonius, 2 m. 50 s.; 1872, Mr. Savile's b c Cremorne, 2 m. 45½ s.; 1873, Mr. Merry's ch c Doncaster, 2 m. 50 s.; 1874, Mr. Cartwright's ch c George Frederick, 2 m. 46 s.; 1875, Prince Batthyany's b c Galopin, 2 m. 48 s.; 1876, Mr. A. Baltazzi's b c Kisber, 2 m. 44 s.; 1877, Lord Falmouth's b c Silvio, 2 m. 50 s.; 1878, Mr. Craufurd's b c Sefton, 2 m. 56 s.; 1879, Mr. Acton's Sir Bevys, 3 m. 2 s.; 1880, Duke of Westminster's ch c Bend Or, 2 m. 44 s.; 1881, Mr. Lorillard's b c Iroquois, 2 m. 45 s.; 1882, Duke of Westminster's ch f Shotover, 2 m. $45\frac{3}{5}$ s.; 1883, Sir F. Johnstone's ch c St. Blaise, 2 m. $48\frac{2}{5}$ s.; 1884, Mr. J. Hammond's b c St. Gatien, and Sir J. Willoughby's br c Harvester, 2 m. $46\frac{1}{5}$ s. (dead heat); 1885, Lord Hastings' b c Melton, 2 m. $44\frac{1}{5}$ s.; 1886, Duke of Westminster's b c Ormonde, 2 m. $45\frac{3}{5}$ s.; 1887, Mr. Abington's b c Merry Hampton, 2 m. 43 s.; 1888, Duke of Portland's b c Ayrshire, 2 m. 43 s.; 1889, Duke of Portland's b c Donovan, 2 m. $44\frac{2}{5}$ s.; 1890, Sir James Miller's ch c Sainfoin, 2 m. $49\frac{4}{5}$ s.; 1891, Sir F. Johnstone's Common, 2m. $56\frac{4}{5}$s.; 1892, Lord Bradford's Sir Hugo, 2m. 44s.; 1893, Mr. H. M'Calmont's Isinglass, 2m. 38s.; 1894, Lord Rosebery's Ladas, 2m. $45\frac{2}{5}$s.; 1895, Lord Rosebery's Sir Visto, 2m. $43\frac{2}{5}$s.

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* The first University race rowed in outriggers.

† The first race in which either University rowed in the present style of eights without keel; also the first time either rowed with round oars. Both used the same kind of oars and boats.

‡ From the High Bridge to Putney Pier.

§ Both crews used sliding seats for the first time.

‖ The Oxford bow man damaged his oar.

No. 7 in the Oxford boat broke his oar.

THE OAKS.—1850, Mr. Hobson's Rhedycina, 2 m. 56 s.; 1851, Lord Stanley's Iris, 2 m. 52 s.; 1852, Mr. J. Scott's Songstress, 3 m.; 1853, Mr. Wauchope's Catherine Hayes, 2 m. 52 s.; 1854, Mr. W. Cookson's Mincemeat, 3 m.; 1855, Mr. R. Read's Marchioness, 2 m. 58 s.; 1856, Mr. H. Hill's Mince Pie, 3 m. 4 s.; 1857, Mr. W. I'Anson's Blink Bonny, 2 m. 50 s.; 1858, Mr. Gratwicke's Governess, 3 m. $53\frac{1}{2}$ s.; 1859, Lord Londesborough's Summerside, 2 m. 55 s.; 1860, Mr. Eastwood's Butterfly, 2 m. 56 s.; 1861, Mr. J. Saxon's Brown Duchess, 2 m. 44 s.; 1862, Mr. R. C. Naylor's Feu de Joie, 2 m. 49 s.; 1863, Lord Falmouth's Queen Bertha, 2 m. 54 s.; 1864, Count de Lagrange's Fille de l'Air, 2 m. 47 s.; 1865, Mr. W. Graham's Regalia, 2 m. 51 s.; 1866, Mr. Dunbar's Tormentor, 2 m. 53 s.; 1867, Baron Rothschild's Hippia, 2 m. 54 s.; 1868, Mr. W. Graham's Formosa, 2 m. $47\frac{1}{2}$ s.; 1869, Mr. E. Johnstone's Brigantine, 2 m. 69 s.; 1870, Mr. W. Graham's Gamos, 2 m. 52 s.; 1871, Baron Rothschild's Hannah, 2 m. 51 s.; 1872, M. Lefevre's Reine, 2 m. 52 s; 1873, Mr. Merry's Marie Stuart, 2 m. $50\frac{3}{4}$ s.; 1874, Mr. Launde's Apology, 2 m. $48\frac{1}{2}$ s.; 1875, Lord Falmouth's Spinaway, 2 m. $49\frac{1}{2}$ s.; 1876, M. Lupin's Enguerrande, 2 m. 50 s.; 1877, Mr. Pulteney's Placida, 2 m. $54\frac{1}{2}$ s.; 1878, Lord Falmouth's Jannette, 2 m. 54 s.; 1879, Lord Falmouth's Wheel of Fortune, 3 m. 2 s.; 1880, Mr. Perkins' Jenny Howlet, 2 m. 49 s.; 1881, Mr. Craufurd's Thebais, 2 m. 46 s.; 1882, Lord Stamford's Geheimniss, 2 m. 49 s.; 1883, Lord Rosebery's b f Bonny Jean, 2 m. 53 s.; 1884, Mr. Abington's b f Busybody, 2 m. 49 s.; 1885, Lord Cadogan's b f Lonely, 2 m. $43\frac{2}{5}$ s.; 1886, Duke of Hamilton's b f Miss Jummy, 2 m. $54\frac{2}{5}$ s.; 1887, Duke of Beaufort's ch f Rêve d'Or, 2 m. $50\frac{3}{5}$ s.; 1888, Lord Calthorpe's ch f Seabreeze, 2 m. $42\frac{4}{5}$ s.; 1889, Lord R. Churchill's b f L'Abbesse de Jouarre, 2 m. 45 s.; 1890, Duke of Portland's br f Memoir, 2 m. $40\frac{4}{5}$ s.; 1891, Mr. Noel Fenwick's Mimi, 2m. $54\frac{3}{5}$s.; 1892, Baron de Hirsch's La Fleche, 2m. $43\frac{1}{5}$s.; 1893, Duke of Portland's Mrs. Butterwick, 2m. $44\frac{4}{5}$s.; 1894, Duke of Portland's Amiable, 2m. 50s.; 1895, Sir J. Miller's La Sagesse, 2m. $48\frac{4}{5}$s.

THE ST. LEGER.—1850, Lord Zetland's Voltigeur, 3 m. 24 s.; 1851, Mr. A. Nichol's Newminster, 3 m. 20 s.; 1852, Lord Exeter's Stockwell, 3 m. 21 s.; 1853, Mr. Bowes's West Australian, 3 m. 20 s.; 1854, Mr. Morris's Knight of St. George, 3 m. 22 s.; 1855, Mr. T. Parr's Saucebox, 3 m. 22 s.; 1856, Mr. Nichol's Warlock, 3 m. 25 s.; 1857, Mr. J. Scott's Imperieuse, 3 m. 25 s.; 1858, Mr. J. Merry's Sunbeam, 3 m. 20 s.; 1859, Sir C. Monck's Gamester, 3 m. 25 s.; 1860, Lord Ailesbury's St. Albans, 3 m. 20 s.; 1861, Mr. W. I'Anson's Caller Ou, 3 m. 14 s.; 1862, Mr. S. Hawke's The Marquis, 3 m. 22 s.; 1863, Lord St. Vincent's Lord Clifden, 3 m. $17\frac{1}{2}$ s.; 1864, Mr. I'Anson's Blair Athol, 3 m. $19\frac{1}{2}$ s.; 1865, Count F. de Lagrange's Gladiateur, 3 m. 20 s.; 1866, Mr. Sutton's Lord Lyon, 3 m. 23 s.; 1867, Colonel Pearson's Achievement, 3 m. 17 s.; 1868, Mr. Graham's Formosa, 3 m. $19\frac{1}{2}$ s.; 1869, Sir J. Hawley's Pero Gomez, 3 m. $21\frac{1}{2}$ s.; 1870, Mr. T. V. Morgan's Hawthornden, 3 m. $18\frac{1}{2}$ s.; 1871, Baron Rothschild's Hannah, 3 m. 22 s.; 1872, Lord Wilton's Wenlock, 3 m. $21\frac{1}{2}$ s.; 1873, Mr. Merry's Marie Stuart, 3 m. 22 s.; 1874, Mr. Launde's Apology, 3 m. 10 s.; 1875, Mr. W. S. Craufurd's Craigmillar, 3 m. 20 s.; 1876, Lord Dupplin's Petrarch, 3 m. $19\frac{1}{2}$ s.; 1877, Lord Falmouth's Silvio, 3 m. 27 s.; 1878, Lord Falmouth's Jannette, 3 m. $20\frac{1}{2}$ s.; 1879, Count Lagrange's Rayon d'Or, 3 m. 21 s.; 1880, Mr. C. Brewer's b c Robert the Devil, 3 m. 32 s.; 1881, Mr. P. Lorillard's br c Iroquois, 3 m. $20\frac{3}{5}$ s.; 1882, Lord Falmouth's Dutch Oven, 3 m. 16 s.; 1883, Duke of Hamilton's b c Ossian, 3 m. 19 s.; 1884, Mr. R. C. Vyner's b c The Lambkin, 3 m. 14 s.; 1885, Lord Hastings' b c Melton, 3 m. $15\frac{3}{5}$ s.; 1886, Duke of Westminster's Ormonde, 3 m. $21\frac{2}{5}$ s.; 1887, Lord Rodney's Kilwarlin, 3 m. 26 s.; 1888, Lord Calthorpe's Seabreeze, 3 m. $11\frac{4}{5}$ s.; 1889, Duke of Portland's b c Donovan, 3 m. 13 s.; 1890, Duke of Portland's b f Memoir, 3 m. $13\frac{3}{5}$ s.; 1891, Sir F. Johnstone's Common; 1892, Baron de Hirsch's La Fleche, 3 m. $14\frac{3}{5}$ s.; 1893, Mr. H. M'Calmont's Isinglass, 3 m. $12\frac{3}{5}$ s.; 1894, Lord Allington's Throstle, 3 m. $12\frac{1}{6}$ s.; 1895, Lord Rosebery's Sir Visto.

TROTTING.

BEST PERFORMANCES IN AMERICA.

Distance.	Time.			Particulars.
Miles.	h.	m.	s.	
1	0	2	$3\frac{3}{4}$	Alix, accompanied by runner, Galesburg, Ill., September 19th, 1894.
2	0	4	32	Greenlander, against Time, Terre Haute, Ind., November 4th, 1893.
3	0	6	$55\frac{1}{2}$	Nightingale, in harness, against Time, Nashville, Tenn., October 20th, 1893.
4	0	9	58	Bishop Hero, in harness, Oaklands, Cal., October 14th, 1893.
5	0	12	$30\frac{3}{4}$	Bishop Hero, in harness, Oaklands, Cal., October 14th, 1893.
10	0	26	15	Pascal, in harness, against Time, N. Y. City, November 2nd, 1893.
20	0	58	25	Captain McGowan, in harness; half-mile track, Boston, October 3rd, 1865.
50	3	55	$40\frac{1}{2}$	Ariel, in harness, New York, November 12th, 1846.
100	8	55	53	Conqueror, in harness, Union Course, L.I., November 12th, 1853.

BEST PERFORMANCES IN ENGLAND.

Distance.	Time.			Particulars.
Miles.	H.	M.	S.	
1	0	2	$24\frac{3}{5}$	Rowley, Liverpool, March 20th, 1893.
$1\frac{1}{2}$	0	3	$41\frac{4}{5}$	Rowley, Alexandra Park, June 10th, 1893.
2	0	5	$11\frac{1}{5}$	General Scott, Alexandra Park, May 2nd, 1892.
3	0	7	$50\frac{1}{5}$	Rowley, Alexandra Park, June 12th, 1893.
4	0	11	2	Lady Combermere, Manchester, June 11th, 1894.
5	0	13	53	Lady Combermere, Manchester, June 11th, 1894.
10	0	29	43	Lady Combermere, Manchester, June 16th, 1894.
20	0	59	$59\frac{3}{5}$	Lady Combermere, Manchester, June 10th, 1895.
50	3	52	0	Ginger, Waggon and Driver, Bath Road, July 10th, 1887.

SWIMMING.

Amateur Records.

Distance.	Name.	Time.		Year.
Yards.		M.	S.	
100	J. H. Tyers . . .	1	$2\frac{3}{5}$	1894
150	J. H. Tyers . . .	1	$42\frac{2}{5}$	1894
220	J. H. Tyers . . .	2	$46\frac{2}{5}$	1892
300	J. H. Tyers . . .	3	$56\frac{1}{5}$	1893
440	J. H. Tyers . . .	5	$53\frac{1}{5}$	1894
500	J. H. Tyers . . .	6	45	1894
*880	J. H. Tyers . . .	13	$20\frac{1}{5}$	1895
1000	J. H. Tyers . . .	15	2	1894
Mile.	J. H. Tyers . . .	27	$21\frac{2}{5}$	1893

*Made in the 1 Mile Championship, July 13th, 1895. The whole of the Amateur records as recognised by the Amateur Swimming Association, are held by J. H. Tyers, who at present is holder of all the Championships.

Professional Records.

Distance.	Name.	Time.		Year.
Yards.		M.	S.	
80	J. Haggerty . . .	0	51	1887
100	J. Haggerty . . .	1	$3\frac{1}{4}$	1887
150	J. Nuttall . . .	1	$41\frac{2}{5}$	1894
220	J. Nuttall . . .	2	37	1894
500	J. Nuttall . . .	6	$28\frac{1}{2}$	1890
880	J. Nuttall . . .	12	$13\frac{3}{4}$	1890
1000	J. Nuttall . . .	13	$54\frac{1}{5}$	1890
*Mile.	J. Nuttall . . .	26	8	1893
Mile.	J. J. Collier . . .	27	$3\frac{1}{2}$	1885

*In open still water.

SWIMMING UNDER WATER.

Longest distance on record, 113 yds. 1 ft., by J. Finney, 1882.

PLUNGING.

Best Plunge on record, either Amateur or Professional, 75 ft. 7 in., by G. A. Blake (Amateur), 1888.

BEST RECORDS IN WALKING.

Amateur Records.

Miles.	Name.	Date.	Time.		
			H.	M.	S.
1	F. P. Murray . .	1883	0	6	$29\frac{3}{5}$
2	F. P. Murray . .	1884	0	13	$48\frac{3}{5}$
3	F. P. Murray . .	1883	0	21	$9\frac{1}{5}$
4	W. H. Meek. . .	1884	0	29	10
5	H. Curtis . . .	1890	0	37	17
6	H. Curtis . . .	1890	0	44	57
7	H. Curtis . . .	1890	0	52	$28\frac{2}{5}$
8	J. B. Clark . . .	1880	1	2	$8\frac{1}{2}$
9	D. A. Driscoll . .	1881	1	9	$31\frac{1}{2}$
10	E. E. Merrill . .	1880	1	17	$40\frac{3}{4}$
20	T. Griffith . . .	1870	2	47	52
50	A. W. Sinclair . .	1879	8	25	$25\frac{1}{2}$
100	A. W. Sinclair . .	1881	19	41	50

Professional Records.

Miles.	Name.	Date.	Time.		
			H.	M.	S.
1	W. Perkins . . .	1874	0	6	23
2	J. W. Raby . . .	1883	0	13	14
3	J. W. Raby . . .	1883	0	20	$21\frac{1}{2}$
4	J. W. Raby . . .	1883	0	27	38
5	J. W. Raby . . .	1883	0	35	10
6	J. W. Raby . . .	1883	0	43	1
7	J. W. Raby . . .	1883	0	51	4
8	J. Meagher . . .	1882	0	58	37
9	J. W. Raby . . .	1883	1	7	14
10	J. W. Raby . . .	1883	1	14	45
20	W. Perkins . . .	1877	2	39	57
50	J. Hibberd . . .	1888	7	54	16
100	W. Howes . . .	1880	18	8	15
200	G. Littlewood . .	1882	40	46	30
300	G. Littlewood . .	1882	66	30	0
400	G. Littlewood . .	1882	96	51	3
500	G. Littlewood . .	1882	130	33	45

4,000 quarter-miles in 4,000 periods of ten minutes (walking a quarter mile at the commencement of and within each consecutive ten minutes).—Performed twice by William Gale, at the Canton Hotel Grounds, Cardiff (June 28th to July 25th, 1877), and at the Agricultural Hall, London (October 21st to November 17th, 1877).

1,500 miles in 1,000 hours (mile and a half each hour, starting at the commencement of the hour)—Successfully performed by William Gale (height 5 ft. $3\frac{1}{2}$ in.) at Lillie Bridge. He commenced his task at 2.20 a.m. on Sunday, August 26th, 1877, and completed it on Saturday, October 6th, at 5 h. 16 m. 50 s. p.m.

J. Meagher walked 8 miles 302 yards in one hour; New York, November 29th, 1882.

G. Littlewood walked 531 miles in six days; England, 1882.

G. Littlewood covered (go-as-you-please) $623\frac{3}{4}$ miles in six days; New York, 1888.

RUNNING.

Amateur.

Distance.	Name.	Year.	Time.		
			H.	M.	S.
Yards.					
100	A. Wharton . .	1886	0	0	10
120	C. A. Bradley . .	1893	0	0	$11\frac{3}{5}$
Hurdle.					
120	G. B. Shaw . .	1895	0	0	$15\frac{4}{5}$
125	C. H. Sherrill . .	1889	0	0	$12\frac{2}{5}$
150	C. G. Wood . .	1889	0	0	$14\frac{4}{5}$
200	E. H. Pelling . .	1889	0	0	$19\frac{4}{5}$
220	H. Jewitt . .	1892	0	0	$21\frac{3}{5}$
250	W. T. Macpherson .	1891	0	0	$24\frac{3}{5}$
300	A. R. Downer .	1895	0	0	$31\frac{2}{5}$
400	W. C. Downs . .	1890	0	0	43
440	W. Baker . .	1886	0	0	$47\frac{3}{5}$
1,320	T. P. Conneff . .	1893	0	3	7
Miles.					
1	F. E. Bacon . .	1895	0	4	17
$1\frac{1}{2}$	S. Thomas . .	1893	0	6	$53\frac{3}{5}$
2	W. G. George . .	1884	0	9	$17\frac{2}{5}$
3	S. Thomas . .	1893	0	14	24
4	C. E. Willers . .	1893	0	19	$33\frac{4}{5}$
5	S. Thomas . .	1892	0	24	$53\frac{3}{5}$
10	W. G. George . .	1884	0	51	20
20	G. Crossland . .	1894	1	51	54
30	J. A. Squires . .	1885	3	17	$36\frac{1}{2}$
40	J. E. Dixon . .	1884	4	46	54
50	J. E. Dixon . .	1885	6	18	$26\frac{3}{5}$
100	J. Saunders . .	1882	17	36	14
120	J. Saunders . .	1882	22	47	23

Professional.

Distance.	Name.	Year.	Time.		
			H.	M.	S.
Yards.					
50	H. M. Johnson .	1884	0	0	$5\frac{1}{4}$
75	J. Quick . . .	1888	0	0	$7\frac{1}{4}$
100	H. Bethune . .	1888	0	0	$9\frac{4}{5}$
120	T. M. Malone. .	1888	0	0	$11\frac{1}{2}$
130	W. Johnson . .	1867	0	0	$12\frac{1}{8}$
150	H. Hutchens . .	1887	0	0	$14\frac{1}{2}$
220	H. Hutchens . .	1885	0	0	$21\frac{4}{5}$
250	H. Hutchens . .	1887	0	0	$25\frac{1}{4}$
300	H. Hutchens . .	1884	0	0	30
350	T. M. Malone . .	1884	0	0	$37\frac{1}{5}$
440	R. Buttery . .	1873	0	0	$48\frac{1}{4}$
500	J. Powers . .	1881	0	0	59
600	J. Nuttall . .	1864	0	1	13
880	F. Hewitt . .	1871	0	1	$53\frac{1}{2}$
1,000	W. Cummings .	1881	0	2	17
1,320	W. Richards . .	1866	0	3	7
Miles.					
1	W. G. George . .	1886	0	4	$12\frac{3}{4}$
$1\frac{1}{2}$	W. Cummings .	1880	0	6	$43\frac{1}{5}$
2	W. Lang. . .	1863	0	9	$11\frac{1}{2}$
3	P. Cannon . .	1888	0	14	$19\frac{1}{5}$
4	P. Cannon . .	1888	0	19	$25\frac{3}{4}$
5	Jack White . .	1863	0	24	40

Professional—continued.

Distance.	Name.	Year.	Time.		
			H.	M.	S.
Miles.					
6	Jack White . .	1863	0	29	50
7	Jack White . .	1863	0	34	45
8	J. Howitt . .	1852	0	40	20
9	J. Howitt . .	1852	0	45	21
10	W. Cummings .	1885	0	51	$6\frac{3}{5}$
11	L. Bennett (Deerfoot)	1863	0	56	52
12	L. Bennett (Deerfoot)	1863	1	2	$2\frac{1}{2}$
15	J. Howitt . .	1852	1	22	0
20	P. Byrnes . .	1879	1	54	0
25	G. Mason . .	1881	2	36	34
30	G. Mason . .	1881	3	15	9
40	J. Bailey . .	1881	4	34	27
50	G. Cartwright. .	1887	5	55	$4\frac{1}{2}$
100	C. Rowell . .	1882	13	26	30
200	C. Rowell . .	1882	35	9	28
300	C. Rowell . .	1882	58	17	6
400	J. Albert . .	1888	84	31	18
500	P. Fitzgerald . .	1884	109	18	20

LAWN TENNIS.

Winners of Championships since 1890.

GENTLEMEN'S SINGLES.

Year. Name.
1890—W. J. Hamilton.
1891—W. Baddeley.
1892—W. Baddeley.

Year. Name.
1893—J. Pim.
1894—J. Pim.
1895—W. Baddeley.

LADIES' SINGLES.

Year. Name.
1890—Miss Rice.
1891—Miss Lottie Dod.
1892—Miss Lottie Dod.

Year. Name.
1893—Miss Lottie Dod.
1894—Mrs. G. W. Hillyard
1895—Miss C. Cooper.

GENTLEMEN'S DOUBLES.

Year. Name.
1890—J. Pim and F. O. Stoker.
1891—W. and H. Baddeley.
1892—E. W. Lewis and H. S. Barlow.

Year. Name.
1893—J. Pim and F. O. Stoker.
1894—W. and H. Baddeley.
1895—W. and H. Baddeley.

BILLIARDS.

Highest Break, all in, 3,304 (93, 3, 150, 123, 172, and 400 spots), W. J. Peall *v.* C. Dawson, Nov. 4-5-6, 1890.

Highest Break, spot barred, 1,392, J. Roberts *v.* E. Diggle, Manchester, May, 3-4, 1891.

Highest Break on a Championship Table, 225, by J. Roberts *v.* D. Richards, March 14, 1890.

J. Roberts made 124 consecutive cannons in match with C. Mennott.

Highest Break on a Standard Table, 571, W. J. Peall, Dec. 2, 1892, and 571, H. Coles, March 13, 1893.

Greatest Number of Spot Hazards in succession, 548, W. J. Peall, May 19, 1884.

Mr. S. S. Christy has made the highest Break in an Amateur Championship Competition, 297 (98 spots), May 12, 1882.

WEIGHTS AND MEASURES.

The following are the principal weights and measures in use in the United Kingdom :—

TROY WEIGHT.

24 grains (*gr.*) = 1 pennyweight. (*dwt.*)
20 pennyweights = 1 ounce. (*oz.*)
12 ounces = 1 pound. (*lb.*)
100 pounds = 1 hundredweight. (*cwt.*)

DIAMOND AND PEARL WEIGHT.

·8 grains (troy) = 1 grain.
4 ,, (3·2 troy) = 1 carat.
150 carats = 1 ounce (troy).

APOTHECARIES' WEIGHT.

20 grains = 1 scruple.
3 scruples = 1 drachm.
8 drachms = 1 ounce.
12 ounces = 1 pound.

APOTHECARIES' MEASURE.

60 minims = 1 fluid drachm.
8 drachms = 1 ounce.
20 ounces = 1 pint.
8 pints = 1 gallon.
60 drops = 1 drachm.
2 drachms = 1 tea-spoonful.
3 ,, = 1 dessert-spoonful.
4 ,, = 1 table-spoonful.
2 ounces = 1 wineglassful.
3 ,, = 1 teacupful.

AVOIRDUPOIS WEIGHT.

16 drachms (*dr.*) (27·34 grains) = 1 ounce. (*oz.*)
16 ounces = 1 pound. (*lb.*)
14 pounds = 1 stone. (*st.*)
28 ,, = 1 quarter. (*qr.*)
4 quarters or 112 pounds = 1 hundredweight. (*cwt.*)
20 hundredweight = 1 ton. (*t.*)

LONG MEASURE.

4 inches = 1 hand.
12 ,, = 1 foot.
3 feet = 1 yard.
6 ,, = 1 fathom.
120 fathoms = 1 cable.
5½ yards = 1 rod, pole, or perch.
100 links, or 66 feet, or 22 yards = 1 chain.
40 rods or 220 yards = 1 furlong.
8 furlongs or 1,760 yds. = 1 mile.
3 miles = 1 league.
69½ ,, = 1 degree.
360 degrees = the circumference of the earth.

CUBIC MEASURE.

1728 cubic inches = 1 cubic foot.
27 ,, feet = 1 ,, yard.

WOOL WEIGHT.

7 pounds = 1 clove. (*cl.*)
2 cloves = 1 stone. (*st.*)
2 stones = 1 tod. (*td.*)
6½ tods = 1 wey. (*wy.*)
2 weys = 1 sack. (*sk.*)
12 sacks = 1 last. (*la.*)
240 pounds = 1 pack. (*pk.*)

SQUARE MEASURE.

144 square inches = 1 square foot.
9 ,, feet = 1 ,, yard.
100 ,, ,, = 1 ,, flooring.
30¼ ,, yards = 1 ,, pole.
16 ,, poles = 1 ,, chain.
40 rods, poles, or perches = 1 rood.
4 roods or 10 chains = 1 acre.
160 rods or 4,840 yards = 1 ,,
640 acres = 1 square mile.

DRY MEASURE.

2 pints = 1 quart.
2 quarts = 1 pottle.
4 ,, = 1 gallon.
2 gallons = 1 peck.
8 ,, = 1 bushel.
64 ,, = 1 quarter.
2 bushels = 1 strike.
4 ,, = 1 coomb.
5 quarters = 1 load.
10 ,, = 1 last.

LIQUID MEASURE.

4 gills = 1 pint.
2 pints = 1 quart.
4 quarts = 1 gallon.
9 gallons = 1 firkin.
10 ,, = 1 anker.
18 ,, = 1 kilderkin.
36 ,, = 1 barrel.
42 ,, = 1 tierce.
54 ,, = 1 hogshead of ale.
72 ,, = 1 puncheon of ale.
108 ,, = 1 butt of ale.

Of wines imported in casks the following are the usual measurements :—

Pipe of port or Masdeu = 115 gallons.
Pipe of Teneriffe 100 ,,
Pipe of Marsala = 93 ,,
Pipe of Madeira and Cape 92 ,,
Butt of Lisbon and Bucellas = 117 ,,
Butt of sherry and tent = 108 ,,
Aume of Hock and Rhenish = 31 ,,
Hogshead of claret 46 ,,

SQUARE MEASURE.

144 square inches = 1 square foot.
9 ,, feet = 1 ,, yard.
4840 ,, yards = 1 ,, acre.
640 ,, acres = 1 ,, mile.

Weights and Measures—*continued.*

Cloth Measure.

2¼ inches = 1 nail.
4½ inches = 1 eighth
9 inches = 1 quarter.
18 inches = 1 half.
36 inches = 1 yard.
A Flemish ell = 3 quarters or ¾ yard.
An English ell = 5 „ 1¼ „
A French ell = 6 „ 1½ „

Measures of Time.

60 seconds = 1 minute.
60 minutes = 1 hour.
24 hours = 1 day.
7 days = 1 week.
28 „ = 1 lunar month.
28, 29, 30, or 31 days = 1 calendar month.
12 calendar months = 1 year.
365 days = 1 common year.
366 „ = 1 leap year.

Miscellaneous Weights, etc.

A stone of butcher's meat = 8 lb.
A stone of horseman's weight = 14 lb.
A stone of iron shot = 14 lb.
A stone of glass = 5 lb.
A seam of glass = 24 st. of 5 lb. = 120 lb.
A faggot of steel = 120 lb.
A ton is in number of bushels = 42.
Cask of bristles = 10 cwt.
A bale of feathers = about 1 cwt.
A pocket of hops = 1½ to 2 cwt.
A bag of hops = nearly 2½ cwt.
A hogshead of tobacco = 12 to 18 cwt.
A peck of flour, 2 gallons = 14 lb.
A firkin of butter = 56 lb.
A firkin of soft soap = 64 lb.
A barrel of gunpowder = 100 lb.
A barrel of raisins = 112 lb.
A barrel of butter, 4 firkins = 224 lb.
A barrel (or pack) of soft soap = 256 lb.
A pig of ballast = 56 lb.
A fodder of lead, London and Hull = 19½ cwt.
A fodder of lead, Derby = 22½ cwt.
A fodder of lead, Newcastle = 21½ cwt.
A cask of blacklead = 11½ cwt.
A sack of potatoes = 168 lb.
A sack of flour = 280 lb.
A sack of coals = 224 lb.
Bag of cocoa = 112 lb.
Bag of coffee = 140 to 168 lb.
Bag of pepper (black) co.'s = 316 lb.
Bag of pepper (white) = 168 lb.
Bag of rice 168 lb.
Bag of sago = 112 lb.
Bag of saltpetre (East India) = 168 lb.
Bag of biscuits (Admiralty) = 102 lb.
Bale of coffee (Mocha) = 224 to 280 lb.
Bale of cotton (Virginia, Carolina and West Indies) = 300 to 310 lb.
Bale of cotton (New Orleans and Alabama) 400 to 500 lb.
Bale of cotton (East India) = 320 to 360 lb.
Bale of cotton (Brazil) = 160 to 200 lb.
Bale of cotton (Egyptian) = 180 to 280 lb.
Bale of rags (Mediterranean) = 404 to 560 lb.
Barrel of anchovies = 30 lb.
Barrel of coffee = 112 to 168 lb.
Barrel of tar = 25 gall.
Barrel of turpentine = 224 to 280 lb.
Barrel of flour = 220 lb.
Barrel of pork = 224 lb.
Barrel of American flour = 196 lb.
Clove of cheese = 8 lb.
Coomb = 4 bushels.
Load of straw = 1,269 lb.
Load of new hay, 36 trusses of 60 lb. = 2,160 lb.
Load of old hay, 36 trusses of 56 lb. = 2,016 lb.
Load of bricks = 500
Load of tiles = 1,000
Peck of salt = 14 lb.
Pipe of Madeira wine = 92 gallons.
Pipe of port wine = 115 gallons.
12 articles = 1 dozen.
1 long dozen = 13 articles.
12 dozen articles = 1 gross.
1 long gross = 156 articles.
20 articles = 1 score.
5 score = 1 common hundred.
6 score = 1 long hundred.
30 deals = 1 quarter.
4 quarters = 1 hundred.
A dicker of skins = 10 skins.
A dicker of gloves = 10 dozen.
A last of hides = 20 dickers.
A last of feathers = 17 cwt.
A last of gunpowder = 24 barrels.
A roll of vellum = 5 doz., or 60 skins.
A hide of land = 100 acres.
A barony of land = 40 hides.
A boll of meal = 140 lb.
2 bolls = 1 sack.
A skein of cotton = 120 yards.
A hank of cotton = 7 skeins.
A Lancashire acre = 7,840 square yards.
A Cheshire acre = 10,240 „ „
An Irish acre = 7,840 „ „
A Scotch acre = 6,104 „ „
A shipping ton (timber) = 42 cubic feet.
A shipping ton (merchandise) = 40 „ „
A stack of wood = 108 „ „
A cord of wood = 128 „ „

Circular Measure.

The diameter of a circle is a straight line passing through the centre from opposite parts of the circumference, or perimeter.—The radius is half the diameter, or a straight line from the centre to the circumference. The diameter is to the circumference about as 7 is to 22, or more nearly as 1 is to 3·1416.—The diameter × 3·1416 gives the circumference.—The radius squared × 3·1416 gives the area.—The diameter squared × 3·1416 gives the area of a sphere or globe. One sixth of the cube of the diameter × 3·1416 gives the solidity of a sphere.

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